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No. 2290.—VOL. XLIX. LONDON, SATURDAY, JULY 12, 1879. [WITH SUPPLEMENT.] PRICE ..... SIXPENCE PER ANNUM, BY POST, £1 4s

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Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES.—No. CXXII.

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
Mining Engineer, Wakefield.
(Formerly Student at the Royal Bergakademie, Clausthal.)

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SECTION VI.

The publication of these Lectures is unavoidably suspended for two or three weeks. They will then be resumed and continued regularly.

BLASTING BY MEANS OF COMPRESSED AIR—No. II.*

BY MR. W. E. GARFORTH.

[*Concluded from last week's Mining Journal.*]

Mr. JOHN HIGSON said he should be glad to know if Mr. Garforth could give the meeting any idea of what increased cost would be placed upon the working of coal by the adoption of compressed air. It would also be interesting to know what were the probabilities of risk, through the bursting of the cartridges, when handled in and about the working of the machine.

Mr. G WILD said he had the pleasure of witnessing the experiments that were conducted the previous evening at the Bower Colliery, and he must say that, so far as the throwing down of the coal was concerned, the effect of compressed air seemed quite equal to that of gunpowder. The coal was not very much broken, but it was broken sufficiently to split up for filling. The time occupied certainly was long; and looking at the matter in all its bearings he thought much would need to be done before the apparatus could supplant gunpowder where gunpowder was admissible. As a scientific experiment, however, it seemed to him to be quite a success. The enormous pressure that was obtained, and the time that elapsed before the explosion of the cartridge seemed to come in very well with previous calculations. The cartridge burst at a pressure of 9550 lbs., and the calculation had been from 90000 lbs. to 10,000 lbs. Altogether it seemed to him to be a good start, and might be the forerunner of something that would supersede gunpowder. The blasting of the cartridge was somewhat like the blasting of a shell. The cartridge, he should say, broke into a score of pieces, and the whole of the pieces lay just below the hole. The coal is thrown down just as a shot would have thrown it down. He (Mr. Wild) asked Mr. Smith, the manager of the colliery, how a shot would have been as compared with that, and he said that it would have been about the same, except that the lumps were rather larger, but it was quite as clean as a shot.

Mr. GRIMSHAW said that he was also present at the experiments at the Bower Colliery. The delay in the firing of the cartridges was mainly owing to some small defects, which would have to be, and could be, overcome in the compressing machine. The cartridge was about ½ in. thick, and 11¾ in. by 2 in. or so inside, and the time taken up in exploding the shell—for it was nothing more than that—when the machine was got into order was about 9 minutes. There was very little slack made. The coal was not much blown, but it was blown down not in large lumps (he supposed that would be on account of the cleavages), but in lumps that would be readily split and filled into round coal. He had not the slightest doubt after seeing the experiment, and after going into the place immediately after the shot had been fired, that the little failures that existed in the machine would be overcome, simply because in any experiment of that sort it were the details that interfered with success; and they have to be, and in this case no doubt will be, overcome one by one. At a previous experiment the cartridge was so completely shattered that he counted 35 pieces; but the ends, being about 1½ in. thick as against the ½ in. of the body, remained intact. The pipe also connected with the cartridge through which the air was compressed, remained intact, and could be unscrewed from the end of the cartridge. There seemed to be a kind of Scotch mist created by the explosion, and at Bower Colliery (the place in which the last experiment was made) though cool before was very much cooler after the blast.

Mr. PENMAN said he was present at the first trials with compressed air made at Wigan last year, and a difficulty then seemed to be the large escape of air between the machine and the shell. He did not gather from the paper how the connection is made by Mr. Garforth.

Mr. HALL said it was no doubt very important that something should be introduced in place of gunpowder. Wedges in large numbers had been tried, and he thought he had tested most of them personally. Hydraulic driven wedges seemed to fail because the action was slow, and the others failed because the manual labour was too great. In the use of compressed air (and he said this not to discourage Mr. Garforth, but rather to give him assistance) there were two or three weak points. First, he seemed to think that 9000 lb. pressure would be sufficient to bring down hard coal. It was a mistake to assume any pressure less than that exerted by gunpowder for bringing down hard coal, and that was at least four times 9000 lb. per square inch. With reference to carrying a vessel containing compressed air into the workings and transferring the pressure from that into the vessel already in the coal his opinion was that, in that operation an immense amount of the pressure would be lost, because the air must in that case be expanded into twice the original space. Thus at least half the pressure would disappear. This would be a very great drawback. He believed also it would be found that there was great difficulty in preventing injury to the pipe through which the air passed by the falling coal. There was another point which he (Mr. Hall) advanced with great diffidence; it seemed to him a question whether it was possible to have any sudden expansion of gases—air, if they liked—approaching anything like gunpowder in force without producing flames. He might be wrong in that; he just mentioned it so that it might be taken into consideration.

Mr. WOODWARD said the one difficulty that presented itself to his mind was that in applying Mr. Garforth's suggestions to a large colliery, where they had a large number of working places, the cost would be a most serious consideration. Gunpowder was very cheap and very portable, and the question was how would the use of compressed air compare with it as to cost? Moreover, upon the system described by Mr. Garforth (of course it might be capable of improvement) he did not think they got anything like the pressure of the commonest gunpowder that was used. Then there was the question of portability and the difficulty of pipes. He had had something to do with compressed air, and at the present time was using it for a good many purposes; and the difficulty he found was the great costliness of the pipes for conveying the compressed air either to drills or any machine whatever for which they might be using it. Even at the low pressure of 160 lbs. they found an india-rubber pipe lined with copper wire, a very expensive commodity, and it was of importance in such a matter to reduce as far as possible the expense. Then there was the point mentioned by Mr. Grimshaw. He said that after the explosion of the cartridge a sort of Scotch mist was perceptible. The question was—what effect would that mist have upon the roofs of some mines, because dampness in many mines was the cause of considerable displacements and falls of roof. Of course, if anything could be applied in the place of gunpowder they ought to do everything in their power to bring it into use. Gunpowder there was no doubt was a source of danger, but then as to compressed air there came the question of applying it. Could an ordinary collier be trusted to apply that power in his working place? That to his mind was a most important consideration. In an ordinary colliery there would be perhaps 100 colliers, all using gunpowder. How long would it take to bring those colliers to apply compressed air instead or safe to leave it in their hands under great pressures? Those were one or two points which presented themselves to his mind as matters of difficulty. Of course, if it came to be adopted men would no doubt be educated up to the use of it.

Mr. RADCLIFFE said he had seen the experiments described, and was of opinion, from the effects of the blast that compressed air did its work in a manner quite equal to or better than powder would have done it. It did not scatter the coal, and he could have stood within a couple of yards with perfect impunity. He took up some of the fragments of the shell immediately below the hole in which it had rested prior to the explosion. With reference to the supposed loss of pressure he was of opinion that it would be extremely small. The pressure could be maintained even after having to fill the pipes and the cartridge. The pipes did not need to be long. The air vessel could be placed a few feet from the cartridge, and the valve turned by other means than the hand. The blast had undoubtedly a cooling effect upon the working place, but he perceived no smoke or vapour. That was an important point in some collieries where a large quantity of gunpowder was now used.

Mr. G. WILD said that, as Mr. Grimshaw had already remarked, the place felt quite cool after the explosion. He went into it directly after, but perceived none of the mist which Mr. Grimshaw said was noticeable in the boiler.

Mr. MARTIN said that one evening last week at Mr. Garforth's works he saw a cartridge exploded under a comparatively low pressure (7500 lbs.), and was surprised at the small size of the fragments. He did not think it at all likely that flame would be generated by the explosion. In the trial at Bower Colliery which was referred to, the coal was undoubtedly very strong, but it was holed he thought beyond the average distance. The danger of carrying the loaded shells about, he considered an important point.

The CHAIRMAN: Did you notice the mist?——Mr. MARTIN, Yes, but not particularly.

Mr. GRIMSHAW said there was a very distinct mist in the first experiment. There was a good air going into the mine at the time of the experiment on Monday evening, but there was a distinctly damp feeling in entering the place immediately after the cartridge had exploded.

Mr. HOLLINGWORTH said the mist he thought would be the result of coolness, owing to the expansion of the air. He would like to know if the shock arising from the blast would not be liable to explode the vessel containing the compressed air.

The CHAIRMAN said that was the risk. The study of explosives seemed to have been hitherto chiefly directed in relation to purposes of war, but the large gathering of practical mining engineers, managers, and agents who were then present showed that in their opinion it also had its attractions in regard to purposes of mining. It is perhaps of more importance in relation to the economy of labour and the cheap production of material or work that explosives were of importance to the nation, for it was only by the saving of labour and cheap production that the sinews of war could be provided. But like most useful inventions they were not all good, and all that should be expected of them was that they should have a balance of advantage in their favour. They knew that powder in the working of some mines was at the present time indispensable; but if the day should come which Mr. Garforth prophesied, when its use would be entirely prohibited, still the need of some explosive, be it compressed air or water, would be indispensable, unless they reverted to the times depicted in a book which would be found in the library dating three or four centuries back, when the rocks had to be softened with fire, and the miners had to protect themselves as best they could from suffocation. There were others besides Mr. Garforth who were seriously of opinion that the day would come when gunpowder would be prohibited in mines. He had not himself, however, been able to look at it in that light. He thought with the aid of such precautions as presented themselves to practical men powder might continue to be used until some explosive was found that would be attended with fewer drawbacks. The drawbacks to this invention had been named. The chief ones were extra cost and the risk of carrying the compressed air about the mine. These were points which Mr. Garforth had taken notes of, and might be able to answer. The mist perceived after explosion had he thought been satisfactorily explained by the sudden appropriation of the latent heat from the surrounding atmosphere, which, as the paper described, produced ice; so that to that extent if the compressed air were carried into the mine in portable vessels and there exploded it would have a cooling effect in deep mines, which was very important. Then doubts had been expressed as to sufficient pressure being obtainable in any way comparable to the pressure of gunpowder.

Mr. REUSS said that the gentlemen who had already spoken were for the most part mining engineers. His business, however, had only been to make a machine which would effect a given purpose. In the Wigan experiments the cartridges used were made of tin or cast-iron, and the internal bore being uncertain it was impossible to say at what pressure they would explode; therefore, his first consideration was to make a cartridge that would go off at a certain pressure. To do this a peculiar machine for casting had to be prepared, so that 1-32d of an inch could be added to the internal bore, each 1-32d inch so added giving an additional pressure of 1000 lbs. This pressure was further increased when the cartridge was put into the rock; for instance a cartridge that went off in the presence of Mr. Martin the other day at 7500 lbs.—if that had been put into the coal experimented on the previous day (Monday) a pressure of 1500 lbs. more would have been needed to make it explode. The cartridge used at the Bower Colliery went off at a pressure of 9500 lbs., and he was informed by Mr. Grimshaw that the effect upon the coal was the same as if two blasts of powder had taken place with 1½ lb. of powder. One of the previous speakers had made a comparison of the bore exerted by powder and compressed air. The action of gunpowder upon coal was rather to smash it, whilst that of compressed air was as if a lever were used to wedge it down from the roof or sides as the case might be. It had been remarked that in former experiments the joints of the machine did not hold; the cause of that was the suddenness and irregularity of the different injections of air. In the machine they now had in use, and which might be seen by any gentlemen interested in the matter, the action was continuous—there were no jumps.

The CHAIRMAN asked how the pressure is ascertained.——Mr. REUSS said there are two pressure gauges, one to check the other.

Mr. JOHN HIGSON asked if the breaking point of the cartridge would be dependent upon the nature of the strata in which it was inserted, assuming the hole to be drilled by machinery, so that a perfect fit might be obtained.

Mr. REUSS said that it took a greater pressure to blast the same cartridge at the Bower Colliery than it would have done at Denton, where the coal is not so strong.

Mr. GARFORTH said he did not know whether Mr. Higson was aware that all the experiments hitherto had been conducted to ascertain what pressure could be obtained. But he had endeavoured to show that as compared with under-cutting the difference in time taken between compressed air and gunpowder to break down the coal would be very trifling. The cost of the former he admitted was more than that of gunpowder, but against the cost they must put the additional safety, which was of the greatest importance. With respect to the supposed danger from the machine bursting he might say the barrels were made of Whitworth's compressed steel, and, therefore, stronger than there was any real necessity for. When the air was forced through the valves there was not the same danger of giving way or rebounding in the machine as might be imagined. Mr. Wild, while admitting the machine had done all that was required, stated that it was more of a scientific experiment, which he considered hardly a fair definition, as the results were eminently practical. In answer to Mr. Hall, who had compared the force of gunpowder with that of compressed air, he might say the opinions of scientific men with respect to the force of gunpowder varied very considerably from the time of Sir Humphry Davy to that of Faraday, but Prof. Abel placed it at 42 tons to the square inch—that was gunpowder of a certain quality—and assuming the power was present which had to be overcome. If, however, gunpowder be placed upon a plate and ignited it explodes with a puff; but if the same quantity were confined in a sufficiently strong and closed vessel the pressure stated would be exerted. In the same way colliers know that if they use 8 ozs. of gunpowder in certain mines it breaks the coal into nearly all small; and perhaps 5 ozs. would have done the work adequately, and produced a better result. With compressed air it had been proved that with a hole 39½ in. deep, and a certain distance from the undercut, it required only a pressure of 9550 lbs per square inch to force the coal down, with the advantage of giving a large proportion of best coal.

The CHAIRMAN: That will be about 4¾ tons per square inch as compared with 40 tons per square inch by gunpowder.

Mr. GARFORTH further said Mr. Hall had also doubted whether the pressure could be maintained. In reply he might say that he had in experimenting at 6000 lbs. proved that this pressure can be maintained for several hours, and when the construction of the valves was understood he thought it would be admitted that there was nothing by which the pressure could be lost. The presence of mist after the explosion might be explained by the fact that a certain quantity of water was forced into the receiver with each stroke of the pump. The vapour was as it were held in mechanical suspension; and he argued that there was not sufficient heat in the place to hold it in suspension for any length of time, as it was heavier than air it must naturally fall to the ground. They had never found the roof of a mine in that clammy wet state which it would be in if any large amount was given off. Mr. Grimshaw's remark he thought was not so much with regard to mist being given off in the mine as to that which he perceived in the boiler when a cartridge was exploded simply to show him what pressure could be got. There it was confined in a very small space; and, consequently all the more perceptible. In reply to Mr. Woodward he thought his (Mr. Garforth's) idea could be carried out, and receivers made sufficiently strong to stand a test of seven or eight times or even more than the working pressure; then the miners being assured of their safety could be induced without much difficulty to use them.

Mr. MARTIN asked what the cost of the cartridge would be?——Mr. GARFORTH said he could not state the cost exactly. But by adopting a cheaper mode of fixing the pipes to the cartridge and by having the latter made of steel, the cost would be considerably less than it was at present, and perhaps better results would be obtained.

* Transactions of the Manchester Geological Society.

SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE INSTITUTE OF MINING ENGINEERS.

A monthly meeting of the members was held in the new Mining Museum, Dudley, on Monday, when Mr. HENRY JOHNSON, sen. (President) occupied the chair. Among those present were Messrs. W. J. Hayward (Vice-President), W. Farnworth, T. Latham, D. Peacock, T. Parton, F.G.S., J. Cole, Rogers, R. Latham, J. Hughes, J. M. Fellows, George Taylor, Whitehouse, Tomson, W. North (Mayor of Dudley), &c.; Mr. Richard Chambers, coal and iron master, Bilston. The minutes of the previous meeting having been read and confirmed, Mr. Alexander Smith, C.E. (secretary), read the Notes of Evidence given before the Royal Commission on Accidents in Mines, and also a communication from the President of the above Commission in answer to a resolution passed by this Institute, the purport of which was—"That it would be advisable for this Institute to furnish the Commissioners with the names of a couple of representatives who would be willing to give evidence on the above subject." In accordance therewith Mr. Henry Johnson, sen., and Mr. David Peacock were appointed to represent the Institute before the Royal Commission. Mr. Richard Chambers, iron and coalmaster, Bilston, was elected an ordinary member of the Institute. Mr. James Pease, M.E., then read the following paper "Upon Rope Haulage in connection with his Patent Clip":—

Since the publication a few years ago by the North of England Institute of the results obtained by them with the then various systems of rope haulage, this branch of mining detail has received considerable attention, partly as a sequence of that report, and latterly by the necessity of strict economy in the working of collieries through this present depression in the coal trade. The results obtained by the tail-rope committee may be summarised as follows:—Four separate systems were at work—the endless rope No. 1 under the tubs; ditto No. 2 over the tubs; endless chain; tail-rope. Although details of these four separate systems were given, two principles govern the whole.—1. Train loads at high speeds from 8 to 20 miles per hour, with endless rope and tail-rope systems.—2. Distributed loads at slow speeds, from 1½ to 3 miles per hour, with endless rope, No. 2 and chain. The conclusion of the committee pointed out the endless chain as being the most effective and economical system in first cost, labour, and maintenance, with one or two drawbacks (due to the manner of application), thus practically affirming the principle of slow speeds and distributed loads, a principle sufficiently elastic to meet almost every condition of roadway.

The attention thus drawn to the advantages of endless chain caused attempts to be made from time to time, with more or less success, to substitute light steel ropes with frictional attachments, in order to dispense with the heavy first charge and cumbrous weight of chain, and to eliminate those drawbacks named by the committee in their report. Frictional attachments may be of two kinds.—1. Friction by compression of the rope by lever or screw, and worked by manual labour.—2. Friction by deflection of rope from a straight line actuated by the load itself. Under the first head there is the large clamp, 3 to 4 ft. long, and secured by a ring, being attached by a short chain to the load, and is carried by the run-rider, one being required to each set. The frictional resistance of this clamp on (say) a ¾-in. rope is equal from 20 to 25 cwts., and will slip at from 25 to 30 cwts. A modification of this, also in use, is a bogie train with a pivot in the centre (parallel to the rails) from which the clamp is swung; the levers are shortened, a small hand screw being substituted. This type is more handy than the former, but less powerful by about 20 per cent.

Another form of screw clamp used for small sets of four to eight tubs consists of a bar 2 ft. long, with a hook at one end and a jaw at the other, with a moveable piece to clamp the rope, and worked with a screw and key. This clamp is attached to the draw bar of the tub, requires no rider, but is unsuitable for curves except of very large radius; the working strain is from 5 to 7 cwts., and will slip at 9 or 10 cwts. Generally speaking these several methods of friction by compression require with heavy loads a fair margin of power to be left so as to prevent accident, and it is found in practice with these heavy strains that the rope soon becomes damaged, and is only efficient for a very short period. In order to make available the full economy of distributed loads, as in the endless chain with single tubs, something more simple than the above was required in order to use boy labour for attaching and to self-detach automatically. Experiments were made a year or two ago to adopt the fork, as used in the chain, by the addition of a horizontal crank of a radius from 2 to 5 inches to be used overhead, deflecting the rope from a straight line by the action of the load on the crank, which was found to answer very fairly for single tubs on level roads and somewhat flat gradients; boys connect the tubs, which self-detach at the end of the plane. Sharp curves and deep gradients cannot be worked with this system and branches imperfectly, owing to both ropes having to be lifted to make a connection. This fork is also used at the side of the tub, but causes considerable side friction on the rails, and requires extra width of roadway. Neither curves, branches, nor sharp gradients can be worked with this arrangement; the working load is 1½ to 2 cwts., and will slip at 3 to 4 cwts. Having to lay down a plan of haulage under conditions which could not be satisfactorily met by any of the foregoing systems I made a few experiments with a view of attaching the rope to the draw bar, as being at once both the natural and most simple connection, and ultimately I succeeded in making a clip which gave the utmost satisfaction. Instead of producing friction by compression or horizontal deflection it is done by a pendulum movement through a variable arc of from 20° to 40°, deflecting the rope to a small extent vertically. The clip consists of a fast inverted jaw 2½ inches in length, and suitably bored so as to clip the rope loosely, being secured by a falling hoop or box.

A lad couples the clip to the draw bar, and while holding the hoop in his hand allows the two jaws to clasp the rope (which is raised to a suitable height by a small pulley); he then pushes the box on the head of the jaw, the clip being at once actuated by the stationary load. The rope being carried beneath the tubs (which may be placed from 15 to 20 yards apart) dispenses with friction sheaves except where curves are met with, the latter requiring a few steel bored

pulleys placed vertically and to clear the axle. At any point at which it may be desired to detach a pair of inclined slides are laid, so adjusted that the closed jaws will enter, leaving the hoop to slide up the inclined plane, upon which the rope immediately drops out. Traffic from any number of branches can be worked by this plan, and as the branches lengthen short tail ropes could be worked from the main road, and afterwards main ropes could be diverted into branches using single lines of rails, all forward empties being re-attached, the remainder working into branch or with double road in branches, and allowing all empties to work into, and back again with full tubs. This system is found in practice to be remarkably free from accident, the rope acting like a third rail, so that under any condition of roadway the tubs never leave the rails unless they are out of gauge or displaced. With the load properly distributed the power required is less than by endless chains, and is such that common V driving wheels suitably balanced will give the requisite friction without damage to the rope. Maintenance charges are ropes to be replaced every four years, and driving wheels to be turned up every two years. The daily labour charge is from 4s. 6d. to 5s. per day, with an additional 2s. for each branch worked with a capacity of 800 tons per day. The working strain of clips is up to 5 cwts., and they will slide and rebite at 10 to 15 cwts.

Mr. James Pease (Hednesford) exhibited his patent self-detaching rope haulage clip. Mr. Peacock, Mr. Munro, and several other gentlemen spoke in favour of the invention, which was simple and effective, and in great use at West Cannock.

A vote of thanks was accorded Mr. Pease, to which he responded, and he also presented to the Institute one of his hooks.

HOLLWAY'S PROCESS.

A NEW APPLICATION OF RAPID OXIDATION BY WHICH SULPHIDES ARE UTILISED AS FUEL.

This process has for its object the utilisation of the heat generated by the rapid oxidation of certain mineral substances which have not hitherto been used as sources of heat for smelting operations. The heat thus obtained is employed in the reduction of the furnace charge, which may be composed partly of sulphides and partly of siliceous ores. A current of air is forced through molten sulphides, by which means they are very rapidly oxidised. Great heat is thus developed, rendering the process of smelting a self-supporting operation; therefore, no extraneous fuel is required, excepting that employed in raising steam for the blowing engines. Where, however, water power is available steam can be dispensed with, in which case all the carbonaceous fuel necessary for the operation is a little coke to start the furnaces, which stands in the same relative position to the ores as wood does to coal in the lighting of an ordinary fire.

It is well known that pyritous minerals are readily combustible, but the best means of utilising the heat-producing property of metallic sulphides is not so apparent as would at first sight appear. Of these sulphides only iron pyrites is sufficiently combustible at a low temperature to burn in the open air, the mass being raised to the temperature at which the oxidation takes place solely by the union of sulphur and iron with atmospheric oxygen. In Spain there are numerous deposits of poor cupreous pyrites, and the Rio Tinto and Tharsis Companies annually treat at their mines about 1,000,000 tons for the extraction of copper only, which does not average 2 per cent. The process employed consists essentially in roasting the pyrites in heaps in the open air, dissolving out the copper from the roasted material, and precipitating it from the solution by means of iron. These operations extend over several months, any gold or silver contained in the ore is lost, and the iron and sulphur are also wasted. The sulphur passes into the air as an obnoxious and annoying gas, desolating the country for miles around the works.

From the earliest ages carbon has been considered a necessity in all metallurgical operations. The first reduction of metals by means of carbon forms a connecting link between the age of stone and the commencement of civilised art. It is well known that carbon burns at widely varying temperatures, as, for example, in our bodies, in a common coal fire, or in a furnace. A great deal of thought has been devoted to the subject of economising carbonaceous fuel, and great advances have been made in this direction, yet the expenditure of coal or coke necessary (say) to melt a given quantity of metal still far exceeds the theoretical limit. The main causes of this discrepancy may be accounted for as follows:—

1.—Only part of the oxygen of the air passing into a furnace acts on the material to be burnt.

2.—The oxygen is not brought in contact with the combustible matter with sufficient rapidity to obtain the necessary temperature for the operation.

3.—Gases pass off hot and unburnt. These are now, however, frequently utilised.

There is one metallurgical operation in which the two first sources of loss are avoided—Bessemer's, where, by blowing air through molten crude iron, a very high temperature is attained by the combustion of small quantities of carbon and silicon contained in the crude iron; this is, however, not the case in the process of puddling, where the oxidation is spread over a considerable period of time, although the same constituents are frequently burnt in similar proportions; but even in the Bessemer process the carbon is only half burned, and a large amount of heat escapes with the carbonic oxide and nitrogen.

When, however, thin streams of air are forced through molten sulphide of iron lying on a tuyere hearth, a high temperature is produced by the perfect combustion which ensues in the midst of the sulphides, and no unburnt gases, excepting nitrogen and sulphur vapour, escape from the surface of the molten mass. The hot nitrogen and sulphurous acid may be caused to act upon iron pyrites and other mineral matter, and when pyrites is thus heated an atom of sulphur held in feeble combination is in great part expelled, and thus is obtained molten protosulphide of iron, which is subsequently burnt by the oxygen of the air driven in at the lower part of the furnace, thereby producing the heat necessary for continuing the operation. The process may be defined as a system of fractional oxidation, in which the numerous constituents of a complex furnace charge can be separated from each other and concentrated in different parts of the apparatus, the heat necessary for the operation being obtained by combustion of a portion of the less valuable constituents.

The principal ores of all our ordinary heavy metals, except manganese and tin, are sulphides. Iron, although largely occurring in an oxidised form, is abundantly found in combination with sulphur, and bisulphide of iron or iron pyrites is an example of sulphurous and combustible minerals. Associated with the iron and sulphur in iron pyrites are invariably found small quantities of other metals, notably cobalt, nickel, copper, silver, gold, lead, zinc, and arsenic. Of these zinc is almost as combustible as iron itself, while lead and arsenic readily volatilise as sulphides, and cobalt, nickel, and copper are distinctly less readily oxidisable than iron, while silver and gold do not oxidise under these conditions; hence, in supplying air to such material the iron is the first of the elements to suffer oxidation, so that if the oxidation be arrested before the whole of the iron has been burnt the cobalt, nickel, copper, silver, and gold present will be found in the unburnt portion. This principle finds a parallel in the Bessemer process of treating pig-iron for the manufacture of steel, where a current of air is caused to bubble up through a bath of molten crude iron, the silicon is first oxidised, and is closely followed and to a great extent accompanied by the carbon, and no large amount of iron suffers oxidation until the whole of the silicon and carbon have been burnt out of the molten material.

The experiments made at Messrs. Cammell's works, at Penistone, in a Bessemer converter, have proved that by blowing air through molten sulphide of iron, the iron and a portion of the sulphur are oxidised, and if the oxidation is arrested before the combustion of the iron is complete a heavy matt or regulus is obtained, which contains but a small proportion of the iron of the ore, but practically the whole or the greater part of the copper and other less oxidisable metals. In one of these experiments the molten sulphides were run into the converter from a cupola, in which they had been previously melted, and the temperature was kept up until the operation was discontinued—for a period of 10 hours, without the use of any carbonaceous fuel, the heat being entirely derived from the oxidation of the iron and a portion of the sulphur of the lumps of pyrites, which were continuously thrown into the mouth of the converter. A Bessemer converter being unsuited for the collection of the gaseous products, the later experiments have been made in a series of cupola furnaces belonging to Messrs. John Brown and Company (Limited). These experiments have proved the possibility of obtaining a valuable regulus, a slag nearly free from copper, and a considerable quantity of crude sulphur. M. Pourcel, the well-known chemist of the Terrenoire Company, has also made some very interesting experiments, having treated by this method a cupriferous sulphide of antimony containing lead and zinc, using heavy spar and silica as fluxes; he obtained a regulus containing the whole of the copper in the form of sulphide, a slag of light specific gravity, and the lead, zinc, and antimony as two separate sublimates, which were condensed in different parts of the appartus, owing to the superior volatility of sulphide of lead over the oxides of antimony and zinc. In the experiments at Penistone and at Sheffield a cold blast of air was employed, and the gases which passed from the converter or furnace into the open air carried away with them a large amount of heat. In practice, however, it would be economical to employ a hot blast, which could be heated by the waste heat from the escaping gases. It is remarkable that the least valuable metals—iron and zinc—generate by their combustion the largest quantities of heat.

The process may be employed for the reduction of even the more volatile metals, for example, Mr. A. H. Allen, of Sheffield, has thus obtained metallic antimony simply by the oxidation of sulphide of antimony. It is well known that sulphide of lead reacts upon oxide of lead with the production of metallic lead and sulphurous acid. If, therefore, a limited amount of air is blown into molten sulphide of lead, the oxide thus formed in the lower part of the furnace will, in passing upward, come in contact with the hot sulphide of lead, and metallic lead will result with the evolution of sulphurous acid. The furnace having a quiescent hearth below the tuyeres, the metallic lead will collect there, and can be from time to time withdrawn. A limited amount of air must be employed, because if it is driven in too quickly the sulphide of lead would rapidly distil off. In thus treating argentiferous lead ores, the silver (and gold if present) would be found with the first metallic lead reduced. When thus treating galena the furnace should have a basic lining.

The process is peculiarly suitable—

1.—For the treatment of metalliferous substances which cannot be advantageously treated by other processes. For the extraction of sulphur by distillation, and simultaneously for the concentration and separation of cobalt, nickel, copper, silver and gold from minerals in the form of metallic regulus; while lead, zinc, antimony, arsenic, &c., accrue in the sublimates.

2.—For the treatment of complex ores, for example—Grey antimonial copper ores, such as those experimented on by M. Pourcel. Ores similar to those worked at the well-known Bottino Mines, Seravezza, in the Italian Apennines, which contain 13 or 14 heavy metals, including silver and lead, for which latter alone they have been worked for centuries. The blende of lead mines, in Derbyshire termed "muck," usually thrown away by the miners, because the large quantity of lead with which it is associated renders the zinc obtained from it worthless.

3.—For the treatment of auriferous and argentiferous pyrites. It is well known that in practice it is not possible to obtain the whole of the gold from pyrites by amalgamation with quicksilver, because the presence of sulphur and arsenic sickens and flours the mercury, whereas by fusion the whole of the silver and gold present is obtained.

4.—For the treatment of pyrites containing even only small percentages of cobalt, nickel, and copper, which are thus concentrated into a rich regulus, whereas this result is now only obtained by very tedious processes of alternate roasting and reduction. Such ores containing 10 per cent. and even 12 per cent. of copper exist in South America and many other parts of the world, but are not at present capable of economic treatment, owing to the difficulty of obtaining a sufficient supply of cheap fuel. The process can also be advantageously applied to the treatment of richer ores of copper, such as are at present smelted at Swansea.

5.—For the treatment of poor lead ores. If such ores are added to a furnace charge of cupreous pyrites, the silica they contain will be utilised and combine with the resulting oxide of iron to form slag, the galena will be volatilised and be recovered as a sublimate, while any silver present will enrich the regulus. At present by a costly process of crushing and washing these ores the galena is concentrated, although a large proportion is left with the debris and passes with the water into the streams, rendering the existence of fish in such waters impossible. The water power now used for washing the ore could in many cases be employed for producing the blast.

When thus treating cupriferous iron pyrites, four products are obtained:—

1.—A matt or regulus containing from 30 to 50 per cent. of copper, any traces of cobalt, nickel, silver, or gold the ore may contain, the rest of it being iron and sulphur; it has a specific gravity of 4½ to 5.

2.—A slag consisting of silicate of iron from the resulting oxide of iron combined with the siliceous matters contained in the ore and the fluxes added.

3.—Sublimed sulphur, more or less mixed with volatile compounds of lead, zinc, and arsenic.

4.—Sulphurous gases, consisting mainly of sulphurous acid and nitrogen.

The regulus closely resembles and will replace the coarse metal of the Swansea copper process, which is now only obtained at considerable cost of labour, time, and carbonaceous fuel. When, however, sulphides of iron and copper present in the bath are treated continuously by a blast of air a point is at length arrived at when the whole of the iron is oxidised, and the regulus in the bath consists of subsulphide of copper. If, now, a limited supply of air is introduced the copper is reduced to the metallic state with the evolution of sulphurous acid.

The slag obtained in the Penistone experiments was essentially silicate of iron, containing about 50 per cent. of iron and 29 per cent. of silica. It had a density of about 3·8 to 4, and was in composition somewhat allied to the copper smelters' ore furnace slag and to the tap cinder of the iron puddler. By the addition of calcareous materials the specific gravity of the slag is so reduced as to cause it to separate readily from the regulus which collects below it. In one of the later experiments, when lime was used, the proportion of copper lost in the slag was very small; this is, of course, a most important point, for when dealing with ores containing but little copper the presence of even a small percentage in the slag means the loss of a considerable proportion of the copper present. These slags can be utilised for the manufacture of steel, being practically siliceous iron ores free from phosphorus, and their reduction in a blast-furnace can be profitably effected, as the proportion of iron present is high as compared with the weight of the material; indeed, it may be possible to reduce them while in a molten state.

By re-subliming the crude sulphur it can be freed from all impurities except arsenic, and at the works of Messrs. John Hutchinson and Co., Widnes, this is elimininated by means of polysulphide of calcium.

As a certain proportion of the sulphur of the minerals suffers combustion, the resulting sulphurous gases contain from 14 to 15 per cent. of sulphurous acid, and hence the proportion of sulphurous acid to nitrogen is nearly identical with that of the gases produced by roasting pyrites in the kilns employed by vitriol manufacturers, and can, therefore, be used with equal advantage for the production of vitriol in leaden chambers. This appears to be the simplest solution of the great problem how to smelt copper without causing a nuisance to the surrounding neighbourhood, although a similar result might be obtained by collecting and liquifying the sulphurous acid.

The more incombustible materials it is found practicable to employ without too great a loss of temperature, the wider will become the application of the process; for there are many ores, including silicates and carbonates, containing metals in the form of oxides, which might be conveniently smelted by mixing them with a sufficient proportion of pyritous ores to effect their reduction; in fact, one of the chief practical questions connected with this process is how far it may be trusted to effect the smelting of ores or furnace charges containing comparatively moderate proportions of sulphides. It is evident that it will almost entirely obviate the necessity for using carbonaceous fuel, at least as far as the production of a regulus is concerned, and consequently the localities in which smelting operations may be advantageously carried on are thus greatly multiplied. One of its chief merits is that it is equally applicable, with comparatively little extra cost in the working, to very poor and very rich ores, for however small the resulting regulus, it will contain nearly the whole of the cobalt, nickel, copper, silver, and gold present in the furnace charge, while any lead, zinc, antimony, and arsenic will be obtained as sublimates.

— *Society of Arts Journal*, July 11.

The Council of the Society of Arts, in their annual report, state that looking at the character of all the papers brought before the Society during the year the Council feel that they will compare favourably with those of any previous session. It would take too long to discuss the respective merits of all the papers which have been read since Christmas, they were all of considerable value; but amongst them are some deserving special mention, and in Mr. Hollway's paper on "A New Process in Metallurgy," were embodied the results of some of the most important experiments which have been made in that science. So great was the interest aroused by Mr. Hollway's paper that it became necessary to devote a second evening to its discussion; on both occasions the room was crowded, and the discussion was of an important and influential character, the opinions expressed being almost uniformly favourable. Of all the papers read before the society during the year Mr. Hollway's is the one the Council consider the most remarkable and the most important. Should the process at all carry out the expectations of its inventor—and he is supported by some of our leading chemists—it will add one more to the many great inventions which it has been the constant aim of this society to introduce to the world.

— *Society of Arts Journal*, June 27.

GEOLOGICAL SOCIETY OF LONDON.

June 25.—Prof. P. MARTIN DUNCAN, M.B., F.R.S. (Vice-President), in the chair.

Edward Garlick, C.E., Winckley-square, Preston, was elected a Fellow of the Society.——Edmund Knowles Binns, Heavygate-road, Sheffield; and John Dawson, Somerset-place, Bath, were proposed as Fellows of the Society.——Henry Bruce Armstrong will be balloted for as a Fellow of the Society.

The following communications were read:—

1.—On the Evidence that certain species of Ichthyosaurus were Viviparous, by Prof. H. G. Seeley, F.R.S., F.G.S.

2.—On Rhamphocephalus Prestwichi, Seeley, an Ornithosaurian from the Stonesfield Slate of Kineton, by Prof. H. G. Seeley, F.R.S., F.G.S.

3.—A Contribution to South American Geology, by George Attwood, F.G.S.

4.—On the so-called Midford Sands, by J. Buckman, F.L.S., F.G.S.

5.—On the Physical Geography of the North-East of England in Permian and Triassic times, by E. Wilson, F.G.S.

6.—The Formation of Rock-basins, by J. D. Kendall, C.E., F.G.S.

7.—On the Diorites of the Warwickshire Coal Field, by S. Allport, F.G.S.

8.—On Lepidodiscus Lebouri, a new species of Agelacrinites, from the Carboniferous Series of Northumberland," by W. Percy Sladen, F.G.S., F.L.S.

9.—On the Ancient River Deposit of the Amazon, by C. Barrington Brown, A.R.S.M., F.G.S.

10.—The Glacial Deposits of Cromer, by Clement Reid, F.G.S.

11.—On a Disturbance of the Chalk at Trowse, near Norwich, by Horace B. Woodward, F.G.S.

12.—The Submerged Forest of Barnstaple Bay, by Townshend M. Hall, F.G.S.

13.—On a Section of Boulder Clay and Gravels at Ballygalley Head, and an enquiry as to the proper classification of the Irish Drift, by T. Mellard Reade, C.E., F.G.S.

14.—On the Augitic Rocks of the Canary Islands, by Prof. Salvador Calderon: communicated by the President.

15.—On the Cambrian (Sedgw.) and Silurian Beds of the Dee Valley, as compared with those of the Lake District, by J. E. Marr, B.A., F.G.S.

16.—On some Superficial Deposits in the neighbourhood of Evesham, by Rev. A. H. Winningtom Ingram, M.A., F.G.S.

17.—Descriptions of Palæozoic Corals from Northern Queensland, with observations on the Genus Stenopora, by Prof. H. A. Nicholson, M.D., D.Sc., F.G.S., and R. Etheridge, jun., F.G.S.

THE INSTITUTION OF CIVIL ENGINEERS.

The Council have awarded the following premiums in respect of original communications submitted during the Session 1878-79:—

FOR PAPERS READ AT THE ORDINARY MEETINGS.

1.—A Watt Medal and a Telford Premium to GEORGE FREDERICK DEACON,* M. Inst. C.E., for his paper on "Street Carriage way Pavements."

2.—A Telford Medal and a Telford Premium to JOHN BOWER MACKENZIE, M. Inst. C.E., for his paper on "The Avonmouth Dock."

3.—A Watt Medal and a Telford Premium to JAMES NICHOLAS DOUGLASS,* M. Inst. C.E., for his paper on "The Electric Light applied to Lighthouse Illumination."

4.—A Telford Medal and a Telford Premium to ADAM FETTIPLACE BLANDY, M. Inst. C.E., for his paper on "Dock Gates."

5.—A Telford Premium to EDWARD DOBSON, Assoc. M. Inst. C.E., for his paper on "The Geelong Water Supply, Victoria, Australia."

6.—A Telford Premium to JAMES PRICE,* M. Inst. C.E. for his paper on "Moveable Bridges."

7.—A Telford Premium to JOHN EVELYN WILLIAMS, M. Inst. C.E., for his paper on "The Whitehaven Harbour and Dock Works."

8.—The Manby Premium to JOHN PURSER GRIFFITH, Assoc. M. Inst. C.E., for his paper on "The Improvement of the Bar of Dublin Harbour by Artificial Scour."

FOR PAPERS PRINTED IN THE PROCEEDINGS WITHOUT BEING DISCUSSED.

1.—A Watt Medal and a Telford Premium to GEORGE WILLIAM SUTCLIFFE, Assoc. M. Inst. C.E., for his paper on "Machinery for the Production and Transmission of Motion in the large Factories of East Lancashire and West Yorkshire."

2.—A Watt Medal and a Telford Premium to EDWARD SANG, for his paper on "A Search for the Optimum System of Wheel Teeth."

3.—A Telford Premium to WILLIAM GEORGE LAWS, M. Inst. C.E., for his paper on "The Railway Bridge over the River Tyne at Wylam, Northumberland."

4.—A Telford Premium to GEORGE HIGGIN,* M. Inst. C.E., for his "Experiments on the Filtration of Water, with some Remarks on the Composition of the Water of the River Plate."

FOR PAPERS READ AT SUPPLEMENTAL MEETINGS OF STUDENTS.

1.—A Miller Prize to ARTHUR CAMERON HURTZIG,† Stud. Inst. C.E., for his paper on "The Tidal Wave in the River Humber."

2.—A Miller Prize to ROBERT HENRY READ, Stud. Inst. C.E, for his paper on "The Construction of Locomotive Boilers."

3.—A Miller Prize to JOHN CHARLES MACKAY,† Stud. Inst. C.E., for his paper on "The Excavating of a Tunnel in Rock by Hand Labour and by Machinery."

4.—A Miller Prize to PERCY WILSON BRITTON,† Stud. Inst. C.E., for his paper on "The Design and Construction of Wrought-iron Tied Arches."

* Have previously received Telford Medals.

† Have previously received Miller Prizes.

WEST OF SCOTLAND MINING INSTITUTE.—The presidential address of Mr. RALPH MOORE, H.M. Inspector of Mines, contained in the Transactions just issued, supplies a large amount of valuable information. He remarked that the chief advantage of an institution like this is that it brings people engaged in the same pursuits and thinking in the same lines in contact with each other, and allows anyone to get his ideas tested by the intellects of his colleagues free of expense, and with a freedom of speech and a good will which will do him good. The object of such an institution is not to moralise but to endeavour to find out what is the most economical mode of mining and raising the mineral. He discussed the merits of longwall and stoop and room working, and referred to the different methods of supporting the roof, to the use of metal props, and to underground locomotives. Referring to the cleaning of coal he said it seemed to him that much of the inferiority of one seam over another is due to the imperfect cleaning out of stones, brasses, &c., which are capable of being kept separate, with no great deal of trouble, and at little expense. Machinery and pumping arrangements afford room for much variety and economies, although from what he has seen other districts are not much in advance of theirs. In conclusion, he said he had not once mentioned the word safety; not that he had forgotten (it had been uppermost in his mind), but solely that he holds safety to be

fairly included in economy. Anyone practising the greatest economy practises the greatest safety. Free liberal management is the greatest economy, and affords the greatest safety. "There is that scattereth, and yet increaseth; and there is that withholdeth more than is meet, and it tendeth to poverty," are axioms older than mining. The President's address is followed by an interesting paper by Mr. J. C. Simpson, of Hamilton, on the "Ventilation of Mines Economically Considered," accompanied by the discussion which arose upon it; the paper, moreover, is illustrated by three plates of engravings. To judge from what has already been done the Institute promises to prove of great utility to the West of Scotland.

Original Correspondence.

THE INGERSOLL ROCK DRILL.

SIR,—In your report on the exhibits at the Royal Agricultural Show at Kilburn you remark that the Eclipse drill is a modification of the Ingersoll, and that both inventions are in the same American hands, and that the Eclipse has been perfected with the advantage of actual daily practice. As this is not correct, and is calculated to mislead the public, we shall be glad if you will allow us to give a clear statement of the facts connected therewith. The Ingersoll is a drill having a positive mechanical motion, both as to its steam distribution and advance movement. The Eclipse has no positive movement, and, so far as its steam distribution, it is a modification of a patent No. 2624, dated Oct. 24, 1863, by Crease, and, further, an almost exact copy of one by Edwards of later date. The only resemblance to the Ingersoll is in the advance movement, which, though differing in the application, still uses a portion of our patents, and of which infringement we have given due notice to the proprietors.

The Ingersoll rock drill is owned in America by the Ingersoll Rock Drill Company. We are the sole proprietors for Europe, and we have the European right of all patents or improvements possessed by them in America. The Ingersoll was perfected during the excavation of West 68th Street, in New York, by G. Ingersoll, and your statement about the Eclipse is all but a copy of our prospectus issued in 1872. LE GROS, MAYNE, LEAVER, AND CO.

London, July 10.

FLAGSTAFF SILVER MINING COMPANY.

SIR,—I am instructed to forward you a copy of advice received yesterday from the company's legal adviser at Salt Lake City, which is deemed of great importance to the shareholders, as it relieves them of a debt of about 75,000*l*. "The Supreme Court of Utah has just announced its decision in the case of Davis *v.* The Flagstaff Company on his ore contracts, and entirely reverses the action of the District Court below, and holds every point we claimed—namely, 'That the ore contracts were fraudulent and void. That the company never had the power to make them, nor to borrow the amount of money named in them, and that they were never rectified by the company.'" It is contemplated to call a general meeting of the shareholders at an early date, when full details of the company's affairs and recommendations for the future will be submitted.

July 11. A. A. DE METZ, Secretary.

[For remainder of Original Correspondence, see to-day's Supplement.]

ANOTHER GLOUCESTERSHIRE COAL DISTRICT.

[FROM A CORRESPONDENT.]

The people of Newent, in Gloucestershire, have been ringing their church bells and hoisting their flags in celebration of having struck a seam of coal in their neighbourhood. The spot borders on Herefordshire, and is 12 or 14 miles from the Forest of Dean, and nine from Gloucester. I know the old town and its surroundings well—that is to say superficially from the rambler's point of view. I have traversed its ins-and-outs on foot or on horseback in every direction; have often viewed the glorious landscape of forests and hills and fields to be seen from the tump on the summit of May Hill; and, writing this on another landscape, am almost at envy with those who may now sit there in the warm butterfly light of July, and fully realise the few traces which Cowper admits the earth has still left of her youthful beauty when he refers to scenes which suggest reflections such as meliorate the heart, compose the passions, and exalt the mind. If a man wishes to view and enjoy such let him get to Newent, and walk thence up the breezy furzy common to May Hill. The town is old and inert; dropping into it you would fancy yourself in a sort of deadened Bilston without hope of extension, and in its outer parts to do other than follow the plough is an idea which enters the minds of but few. All the means of transit as yet have been a coach, vans, and a narrow canal leading from Gloucester to Hereford, and broken at nearly every mile by locks. I was much reminded of its nature and certain of its people in scanning over John Bright's speech, in answer to the proposal for a commission to enquire into the causes of agricultural depression, made in the House of Commons last Friday night, when he alluded to the dreary stories that might have been told in relation to the iron and coal trades, and when he pictured the farmer and the squire, and talked of the agriculturist who, in his puzzle about the lessened cost of transport from America, exclaimed—"Well, you know I wished that cursed country had never been discovered." This is pretty much the mental condition of many of the farmers around Newent; and there are others, too, who doubtless now answer to the further portrait drawn by the powerful enemy of Protection—"Your tenants are coming to you owing you money, six months' rent or twelve months' rent, and asking you to take 15*s.* in 1*l.* for the debts they owe you. Some because they cannot help it, but others, no doubt from sympathy and generosity and kindness, make these concessions to their tenants. But I confess there is to me something terrible in the idea that hundreds of thousands of tenant farmers throughout Great Britain—many of them, if you see them, are as much gentlemen as the landlords themselves; they live in good houses and keep hunters, and they educate their children as well as their means will permit—that they should be humiliated (that is what they would call it in Lancashire)—to ask somebody to whom they owe 100*l.*, a just and lawful debt, to take 75*l.* instead of 100*l.* That is a state of things in the great paramount interest which you represent, and somehow you are blind; you don't open your eyes to the fact. So usual with you is this extraordinary thing that you don't appear to regard it as anything of great consequence when it periodically happens just for a time."

Newent has its squire, and when I knew the place, now several years ago, his name was Richard Foley Onslow, the owner of much land thereabout; he has been succeeded by his son. At the time I name the Cotswold Field Club had made a visit to the place to test the chance of the neighbourhood becoming a coal field; and Mr. Symonds, a chief member, in a paper he read before the Club, at a dinner in the place, told the speculators that they had hitherto selected the edges of lines of fault wherein to sink their shafts, and that they must take some further point if their speculation was to succeed. His suggestion that they had better dig under Newent itself was rather shaky to certain of the old Newenters of that time. These remarks caused me to recall what I had seen and heard when the matter had been spoken of six or eight years before. Recent discoveries then seemed to have made it probable that the culture of the surface of the land might soon give place to the more profitable working of the interior, and that in respect of our two most useful minerals some provision might be made for the time when the supply of the present coal-producing districts should have been exhausted. The roads by which the neighbourhood was intersected had been cut through the solid sandstone rock, which on either side rose in a wall frequently several feet in height. In places, too, the minerals cropped out of the roadside banks. On one spot the hedgerow grew in a soil which seemed to be almost wholly composed of pulverised iron ore, and this of so rich a quality that a gentleman from South Staffordshire, a friend of mine, pronounced it to be a pure hematite, the sale of which would well repay the cost of working and transit. But this was only one among the many signs of mineral richness which presented themselves, and which led shrewd observers to conclude that both coal and iron were concealed beneath the surface. Stones which the peasant knew to be weighted by something heavier and darker than the ordinary materials had now and again been found in the fields and roads; and instances had been known in which the coal had cropped out of the bottom of a shallow pool, and also upon the surface itself. A negative proof of the presence of coal was also found in the fact than on the most favoured spots the oak flourished to a remarkable extent. The squire's family had long lived in a house just outside the town known as "The Furnace," and by documents he possessed it was proved that the old mansion derived its name from the fact that many years ago its site was occupied by blast-furnaces, wherein ore was smelted that had been procured in the neighbourhood, and these proofs were further strengthened by existing remains of the works and by tradition. Old men were alive who remembered the sinking of no fewer than four or five shafts in one meadow. One of the men told me that he and his fellows met coal at a depth of 24 yards from the surface, and at 134 yards they came upon a seam 7 ft. in thickness. The mineral was soft and brittle, but it burnt well, and so large was the quantity raised that a special branch was cut to the adjacent canal in order to afford the means of transit. This colliery had ceased working about 30 years before. A mile away in a southern direction were the remains of another colliery that had been worked about the same period. The depth of the deepest shaft was 100 yards. Three separate seams of coal were found; one 4 ft., another 3 ft., and a third 6 ft. in thickness. The shafts were worked by a water-engine, and the coal raised was of good quality. Pits had also been sunk upon higher ground 3 miles away to the north; 30 yards down coal was found in a seam 2 ft. thick, and that the colliery would have paid for deeper working was proved by boring. Other spots have been successfully worked; but, after only a short trial, had been abandoned. Want of capital had been generally assigned by the workers as their reason for leaving the experiment when it had only been half tried; and this, doubtless, had been in several instances the true reason. But well-informed people declared that in the other cases the reason was spurious, and averred that the Forest of Dean coalowners, dreading effects from a near rival district, resorted to bribery, and that to this, and to this only, was to be attributed the sudden and repeated abandonments of an enterprise which in its beginning promised every success. So largely, indeed, was bribery alleged to have been used that an old man who had helped to work one of the collieries had been heard to say that when the shafts were covered in 300 tons of coal were left quarried in the workings.

Then the spirit of enterprise seemed to revive in the neighbourhood, and there appeared every reason to believe that the dream of years gone by might yet be realised. Among the shafts sunk and abandoned was one upon Mr. Onslow's large estate at Oxenhall. A collier employed in the mine was an old Welshman, who when he was discharged returned to work in a mine at Merthyr Tydfil. What he had seen in the Newent mines clung to his memory, and at length he paid them a visit, and obtained permission to resume their working; and the sinking of two shafts near the site of an old shaft was at once begun. At a depth of only a few yards I remember the sinkers came upon a seam of Thin coal. Its thickness was irregular; in some places it was 2 ft. in depth, and at others dwindled to a mere thread. But it was considered possible that a much thicker seam might be found lower down or in another spot, and it was the decided opinion of those qualified to judge that the pits would amply pay for continued working. The coal was like that procured in Dean Forest—oily and flaky, breaking easily, burning well, and, though giving a good heat, not rapidly consumed. But the chief interest was then directed to an old iron mine, the working of which had been resumed, and which was furnishing a remarkable yield of ore. The shaft had been driven into the side of a low hill whereon flourished brambles from which the schoolboy had plucked many a glistening berry. The headway was only about 100 yards from the mouth of the inclined shaft, and the vertical distance between it and the surface above was but a few feet. A horizontal aperture of a yard or two in length had also been made in the mineral forming the side of the shaft. The ore was found in a stratum of which neither the vertical depth nor the horizontal breadth had been ascertained. The remarkable fruitfulness of yield, however, was evident when it was stated that in two months the single miner employed had sent up no fewer than 500 tons or 600 tons, and that the prospect of success seemed more cheering than ever. The stone when found was of a reddish colour, but was made purplish in tint by exposure to the air. It crumbled easily, and was stated to be much richer than the blue and grey ores of South Wales. All the produce of the mine up to the period I name had been taken by the Cwmbran Iron Company, and it was conveyed in boats along the canal. Attention was called to the matter by those interested, and I remember a letter sent to me by a friend, in which he wrote—"Exhausted coal fields and decayed commerce have long been synonymous terms. And that such an exhaustion is not alone possible, but even probable, has been equally long acknowledged by geologists. Hence the wisdom of following up the present discovery with a liberal expenditure of capital and energy." The inference now is that the canal may be supplanted by a railway, but whether any bill has been obtained for that purpose I do not know.

ROCK-DRILLING BY COMPRESSED AIR.

In boring deep shafts and tunnels through rock steam cannot be used as a motor to the machinery employed, partly because power is lost by the condensation which takes place in conveying steam the distance required, but chiefly on account of the discharge of the exhaust pipe, which renders working impracticable. Compressed air, on the other hand, can be carried to a considerable distance, at a comparatively small expense, without material loss of power, and the discharge of the compressed air, while the machinery is in motion, actually proves a great advantage to the workmen engaged in close and ill-ventilated shafts or tunnels, inasmuch as it furnishes them with an abundant supply of fresh air. Rock drilling by means of machinery driven by compressed air is being carried on at a colliery in Little Hulton, worked by the Bridgewater Trustees; and, on Thursday last week, a party of inspection visited the pit and went down the inclined tunnel, 12 ft. by 12 ft., with a gradient of one in four, which is being constructed from the surface to the workings, to witness the rock-drilling machinery in operation. The "Burleigh" air-compressor, which is fixed in a wooden shed, at a short distance from the mouth of the tunnel, appears to be extremely simple and effective. It consists of a steam-engine and two single-acting air pumps, worked by a three-throw crank. The compressed air is forced into a capacious receiver, whence it is conducted to the "Burleigh" rock-drilling machine, at the bottom of the tunnel, by means of 2-in. iron pipes, the connections with the drills being of flexible hose, so as to admit of altering the position of the drills. Of course, any other available power might be used to supply the air-compressor, such as a water-wheel, or a turbine. The principal parts of the drilling machine are the cylinder (in which the mechanism of the drill is enclosed) with its piston, and the cradle, with guideways in which the cylinder travels. The action of the piston is like that of a steam-hammer, with the additon of a rotary motion, the drill point, which is fixed in a slip-socket at the end of the piston rod, making a complete revolution in 18 strokes. The drill strikes from 200 to 300 blows a minute, and, as it pierces its way, it is made to keep up to the hard rock by means of a feed screw at the other end of the cylinder. When the cylinder has been forced the entire length of the feed screw it is run back, and a longer drill is fixed to the end of the piston rod should a deeper hole be required. The drilling machine can be worked at any angle, and its proprietors (the Burleigh Rock-boring Company, Manchester) claim that it will drill and clear itself to any depth up to 20 ft. As to speed, they state that it will bore from 4 to 12 in. per minute, according to size, and that in the course of a day it will penetrate 120 ft. of rock, making 40 holes, each from 2 to 3 ft. deep. On Thursday afternoon, a 2½-in. drill bored a depth of 2 ft. 8 in. in 3 minutes and 35 seconds, including the time occupied in changing the drill-point, and it was stated that the same result could only be obtained by hand-drilling in 2½ hours, the stone being what is known as red grit rock. The drilling machine appears to be very easily worked, and it is affirmed that one drill point will go through 20 ft. of Aberdeen granite before it requires re-sharpening. In boring the Hoosac Tunnel, in Massachusetts, U.S, the air was carried through an 8-in. iron pipe to as great a distance as 7150 ft., and, although on an average from six to eight drills were kept at work, the mean difference in pressure at the compressors and at the heading of the tunnel was only about 2 lbs. to the inch. A great advantage gained by using compressed air in tunnels and mines is that the men are able to resume boring operations almost immediately after blasting; whereas when hand-drilling it is found necessary to wait from half an hour to an hour, while the fumes of the charge are dissipated. Messrs. F. Shanley and Co., the contractors for the Hoosac Tunnel mentioned above, stated that they estimated a saving in expense, as compared with hand drilling, of about 33 per cent., and again of fully 50 per cent. in point of time, or fully five years in the completion of the tunnel.

WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,

MINEOWNERS, STOCK AND SHARE DEALERS, &c.

1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

Ten years ago the weekly information which had previously been published for a great number of years in WATSON BROTHERS' Mining Circular was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the Journal on the Clementina Mine.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the 'Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and sharedealing than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to *recommend* mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fornightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

D'ERESBY MOUNTAIN.—We agree with our correspondent that Captain Knapp is about the last person who should criticise estimates or the reports of other agents. In reference to D'Eresby Mountain there is not, and never has been, a "managing director," and all we have written of the mine has been founded on reports of the agents and inspectors, in whom we have placed reliance.

In estimating the lead stuff at 5 per cent. we considered at the time we wrote that we were rather under than over the mark, as the stuff sent to the office, and that which was shown us on the mine, was considerably above that average, and it has not yet been fairly tested from the stope. One of the most experienced miners of the day after inspecting the mine and the No. 4 stope on the Gorse lode reported to a general meeting of shareholders that the quantity of lead stuff to be raised from that lode was only to be limited by the number of men employed. But until the stuff is cleared from the level at No. 4 this cannot be proved. Again, lead stuff assumes a different feature with lead ore at 8*l.* than at 12*l.* per ton; and if our memory serves us this was once made a great point of by Capt. Knapp himself.

Again, the inference Capt. Knapp leads his readers to draw is that an expenditure of 160*l.* per month while water-wheels are frozen up, and again when there is a deficiency of water, is a loss of that amount per month, while, in fact, at D'Eresby it was chiefly expended in opening out five important points in the mine—one of them the expensive No. 5 level.

For many reasons the mere market price of a share is not always a test of the value of a speculation. For two years we drove the pioneer level into the new ground at Wheal Crebor, and the shares dropped so low that the mine would have stopped had we not bought up a large lot at 1*s.* 6*d.* per share, and these we could not sell on the market even at 2*s.* 6*d.*, yet in one week, soon afterwards, the mine rose 20,000*l.* in market value. When D'Eresby Mountain shares rose from 10*l.* to 50*l.* there was such a demand for the adjoining mine, D'Eresby Consols, that it could not be supplied, and many people were angry at not getting more shares. Yet before the speculation is proved some of them want to sell, when there is scarcely a buyer in the market for any mine share whatever. The cross-cut to the Cobbler's lode, or rather adit end, which has cost altogether upwards of 15,000*l.* to reach this object, is close upon the lode, but the ground is hard, and slow progress is made. All lodes dip like the roof of a house. An east and west lode dips or slants into the earth north or south. A north and south lode dips east or west, and a cross-cut may be driven up to the perpendicular of a lode as seen at surface and not reach it 40 fathoms deeper if the dip is the other way; and at present there is no guide as to the exact dip or underlay of the Cobbler.

The cross-cut at Parys Mountain has been about three years in course of driving, and will reach its object ere long, and we hope and believe successfully.

We must look for an improvement in trade generally before we can hope for any great improvement in metals. Other countries are allowed to flood this with tin, lead, and copper, duty free, but they won't receive ours without a heavy duty, and this is called free trade. We cannot say exactly what the duties are, but that on lead is heavy. It is a matter for discussion in the Journal.

MR. WILLIAM H. H. WATSON begs to offer his advice and services to Shareholders and Intending Investors in Mines, and in the Purchase and Sale of Shares. Has Special Business in WHEAL CREBOR; and 25 shares in ARENDAL FOR SALE at £3½ net, £4 paid.

Address: W. H. H. WATSON, 1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON, E.C.

GENERAL MARKETS.—Our markets have been dull and heavy for the last few days. Railways have been particularly flat, owing chiefly to the continuance of bad weather and the prospects of worse dividends. The greatest fall has been in Brighton A, Dover A, and Great Eastern, which have declined nearly 2 per cent. The Metropolitan dividend was announced this week at the rate of 5 per cent. per annum, the same as paid this time last year; also the South-Eastern at 3 per cent., being 1 per cent. worse than last year. Several dividends will be announced in the course of next week. Foreign stocks have been dull, especially Egyptians, but all close better for the week. Spanish stocks are firm. Russian, Hungarian, Austrian, &c., show but little change. American stocks

keep steady. Erie shares are firmer. The English funds are dull, Consols being ¼ per cent. lower for the week. Mines are dull, as metals are low, and there is not much speculation going on.—W. H. H. WATSON: 1, *St. Michael's-alley, Cornhill, E.C., July* 11.

THE WEEK.

SATURDAY, JULY 5.—Egyptian bonds were subject to depression, large sales being made from Paris. Operators there bought very largely in the early part of June, when the dealers here were eager sellers, and can now realise at a good profit. There was also a rumour that England and France intended to set aside for the service of the debt just what Egypt could pay, without regard to the fixed service, which may have induced some selling. Egyptian Preference closed below 72, and the Unified below 48. Railways were comparatively firm, Brighton, A, reaching 111¼, and Dover, A, 112¾. North British have now recovered to 77¼. Some three months ago attention was drawn to the low price of National Discount shares, then about 8¼. Business was done to-day at 10. The dividend is announced as one of 12 per cent. Brown, Davis, and Co., 4 to 4⅛; Credit, A, ⅛ to ⅜: General Credit, 5¼ to 5½; National Discount, 9¾ to 10; United States Rolling Stock, 14¾ to 15¼.

MONDAY.—The Lion Brewery Company announce a dividend of 10 per cent. on the ordinary shares, and one of 6 per cent. on the preference shares, being a mean of 8 per cent., the same as that declared last week by the Devonport and Tiverton Brewery. While the shares of the latter are about par the others (ordinary) command a premium of over 100 per cent. Atlantic and Great Western First Mortgage met with a fall of $1¼, to $33. Other American Railways were strong. Erie, Second Mortage, 78¾ to 79¼. Pennsylvania shares, 40¾ to 41¼; Varna 6 per cent, 6¼ to 6⅜; ditto 3 per cent., 6⅞ to 7⅛; Royal Swedish, 1⅝ to 1⅜; Mexican First Preference, 7⅛.

TUESDAY.—Great heaviness was shown in home railways. From being 60 in the morning, Great Eastern fell rapidly to 58, and only recovered to 58½ at the close. Brighton A and Dover A closed 1*l.* down. Foreign bonds were dull, but did not fluctuate so much. Mexican fell to 11, and Egyptian Preference to 71¾. Foster, Porter, and Co., 17⅛ to 18. National Discount, 9½ to 10. Nerbudda Coal, 4s. to 6s. London Steamboat, 6¼ to 6½. Railway Debenture Trust, 9¼ to 9⅛.

WEDNESDAY.—The markets were again extremely dull. Home railways were prejudiced by the announcement late in the day of the South-Eastern half-yearly dividend as one of 3 per cent, against 4 per cent. Dover, A, receded to 110¼, and Brighton, A, to 110¼ also. Egyptian Bonds had rather a considerable fall, the Preference closed no better than 71, being 1*l.* down; the last price of Unified being 47⅛ to 47⅜; Turkish Fives, 11⅝ to 11⅞; Peruvian, 12 to 12¼; Mexican, 10⅝ to 10⅞; Costa Rica, 12⅜ to 12¾; Honduras, 4 to 4½.

THURSDAY.—Renewed heaviness was shown at the opening, Unified being offered at 46½, and Berwick and Brighton, A, at a fall of from ¾ to 1. But this did not last long, the action of buyers soon causing prices to reach yesterday's level. But very few stocks managed to do better than this, and the markets became dull again towards the close of the day. Van, 15 to 16; Great Laxey, 15 to 15½; South Frances, 7½ to 8; Eberhardt, 2¾ to 2⅝; Brown, Davis, and Co., 3¾ to 4¼; New Sharlstone Colliery, 2¾ to 3¼; Diamond Rock Boring, 1¼ to 1⅝; Imperial Credit, 7⅛ to 7¾; National Discount, 9¾ to 10¾; Aylesbury Dairy, 1 to 1¼; Brighton Aquarium, 6⅛ to 7; Royal Aquarium, 4¾ to 5.

FRIDAY (*Opening*).—Railways again show some signs of recovery. Berwick, that were down at one time yesterday to 130, are now 131½. Great Eastern are 58¾, Dover A 110¾, and Brighton A 110¾. Egyptian Unified are 47¼, or 1*l.* above the worst of yesterday, Preference being 71⅞ to 72⅛. Erie shares, $28¾ to $29; ditto Second Mortgage, 79 to 79¾. Mining shares hardly show any fresh feature. Richmond, 8 to 8¼. Eberhardt, 2 to 2½. Nouveau Monde, ⅝ to ⅞. Pestarena, 3s. to 5s. Don Pedro, 15s. to 17s. East Van, 1⅜ to 2½. Turks, 11¾ to 11⅞. Hungarian Gold, 80½ to 80¾.——*Two o'clock.*—A severe fall has taken place in Oriental Bank shares, which from being quoted 17 to 18 are now but 15⅛ to 16. The foreign and railway markets are quiet, with an inclination to dulness British have been 76¾ to 77, now 76¼ to 76⅛. Turks, 11⅝ to 11¾. Egyptian Unified, 47⅜ to 47⅝. Preference, 71¾ to 72. Ottoman Bank, 10 to 10¼. The Fore Street Warehouse dividend is to be 8s. 6d. per share, or a little over 6 per cent. Last year 8¼ per cent. was given. The gross receipts of the East London Railway are reported to have been a little over 18,000*l.* for the last six months. Atlantic First Mortgage, $32½ to $33. Varna Obligations, 6 13-16ths to 6 15-16ths.——*Four o'Clock.*—British have given way ⅛ further, to 76⅛, Caledonian being 95⅛ to 95⅜. Mexican, 11⅜ to 11⅝. Unified, 47¾ to 47⅝; ditto Preference, 71¾ to 72. Penstruthal shares are weak, and offered at 2s. General Credit, 5 to 5¼. Hudson Bay, 13⅞ to 14⅛. Chapel House Colliery, 1⅛ to 1⅜. Cardiff, ¾ to 1. Newport Abercarn, 4 to 4½.

FERDINAND R. KIRK.

ECONOMIC DRILL HOLES FOR BLASTING.

A proposition has been made by Mr. EDWARD JONES, of Caerphilly, to utilise as a motive force for drilling blast holes the streams of water which run down the sides of quarries and mines, and require the constant exercise of pumping power to prevent undue accumulation of water therein. This water is now usually collected in mines in garland curbs or small gutters placed around the shafts at different depths, and is carried from these curbs to the bottom of the shafts by pipes or hose, whence it is raised to the surface by pumping machinery. Mr. Jones proposes to collect this water flow, whether in mines or quarries, into elevated tanks, and to connect with these tanks hose which will allow him to conduct the water to any point where drill holes are to be formed, the object being to use this water for driving portable turbines connected with rock drills, and thereby impart rotary motion to such drills.

The turbine used will in general be of such size that with the apparatus appertaining thereto it will be capable of being carried to any part of the mine or quarry where the blasting is required, and arranged for action by one man, or (say) at most two workmen. The turbine case he proposes to fit with two hollow handles, and to attach to one of these the water supply hose, and to the other a discharge pipe. As, therefore, water is admitted to the case a rapid rotary motion will be imparted to be turbine. To the turbine spindle he proposes to fit a rock-drill, so that it may receive motion directly therefrom; or in some cases he may transmit this motion to the drill through spur gearing, so as to diminish or it may be increase the speed of rotation of the drill. In this modification the drill spindle will be supported in bearings affixed to the turbine case.

In drilling with this apparatus the attendant, having hold of the handles, will regulate the pressure put on the drill, allowing the whole weight of the apparatus to act on the drill or partially support that weight by his hands according to the nature of the material being bored. It may be found convenient to make the drill spindle hollow, and to deliver a stream of water through the drill for the purpose of lubrication, and also for discharging the cuttings from the drilled hole. For the purpose of executing heavy work he proposes to mount the drilling apparatus in a portable frame. in this case the drill must be arranged so as to follow the work, the turbine maintaining a stationary position in the frame. For the purpose of giving the drill a feed motion he fits on the upper end of the drill spindle a piston, which works in a cylinder closed at top and open at bottom, such cylinder being connected with the head of water which drives the turbine. This cylinder is made adjustible vertically in the framing of the apparatus, and it is moved down as the work progresses. The water in the cylinder will impart a continuous endway pressure to the drill until the piston has reached the end of its course. The cylinder is then to be readjusted to allow of the further descent of the piston. The pressure on the drill in this case will be determined by the pressure of the water admitted to the cylinder Where water power is not available the turbine may be driven by jets of steam or compressed air.

ELECTRIC CANDLES.—Up to the present time all electric candles in use have been made from pure carbon or carbon mixed with other substances, such for example as kaolin or plaster of Paris, which all have the great disadvantage of burning too quickly away, and producing more or less a flickering light. They, therefore, require controlling mechanism to regulate the distance of the candles. Mr. S. COHNE, of Gracechurch-street, proposes to mix a quantity of ultramarine, blue or green, with so much silicate of soda or of potash in solution as is sufficient to produce a paste, which paste he forms into any desired shape or form. He then presses it by a mould into the exact form required, either by hydraulic pressure or otherwise, and have it dried and heated by the fire, whereby all the moisture evaporates, the sulphur burns away, and all the organic matter which may be in it becomes carbonised. When put into use the resistance and the current in the arc are to a very great extent less varying, and controlling mechanism to regulate the distance of the candle is nearly unnecessary, because the candle is consumed very slowly comparatively to others in existence. Further, less consumption of energy is required for his candle, and therefore the divisibility of the electric light becomes easier. For the purpose last named, the divisibility of the light, he draws a copper or platinum wire through or within his candle, whereby the conductibility is greatly increased; thus very little consumption of energy takes place, and the problem of the divisibility of the electric light is solved. What he claims is the use of ultramarine, blue or green, either alone or combined with the above mentioned materials; or instead of using the ultramarine as manufactured, he uses the different substances which together produce the article known as ultramarine. He wishes it to be understood that it is the ultramarine blue or green, or the materials which united produce the ultramarine, which he claims for the preparation of the electric candle as described, either with or without a copper or platinum wire.

SCIENTIFIC EXPERIMENTS WITH DYNAMITE.

A series of scientific experiments of simultaneous blasting by electricity and dynamite took place last week at the Clay Cross Company's limestone quarries, Crich, near Ambergate, in response to an invitation issued. There were present many of the managers of the principal quarries and lead mines in the district, together with numerous visitors. The experiments were conducted by Messrs. JOHNSON and Co., of Dudley (agents for Nobel's Explosives Company), assisted by Mr. JOHN SHEPHERD, Dynamite Instructor.

The electric battery used on the occasion was a magnetic one, and worked with a downward stroke, the battery having cross wires so as to accumulate the current of electricity before being discharged through the wires, which is done by the ram touching a spring at the finish of the stroke, exploding electric detonators charged with platinum and fulminate made specially for the battery, which is patented by Mr. J. W. Smith, of New York.

The advantages of simultaneous blasting are apparent—such as a series of holes well planned to work to each other requires a less amount of explosive material, the resistance being far less than when shots are fired singly, as it then has to tear out and break off the rock independently for each shot, whereas a lot of holes well placed and exploded simultaneously brings the whole lot operated on away at once. Again, by electrical blasting there is no danger of hanging fire, which is always a source of danger with time fuses, to say nothing of the time lost in waiting for shots to go off with long lengths of fuses burning.

The first experiment took place in a ledge of stone on the bottom of the face of the quarry, 12 ft. deep, with a face of 10 ft. and 90 ft. long: into this mass seven holes were churned 10 ft. deep, each charged with 3½ lbs. of dynamite, and electric fuses inserted, coupled up together in circuit by small copper connecting wire insulated with gutta percha. The holes were then stemmed with quarry refuse, and the end wires connected to the two cables leading to the electric machine, which stood surrounded by visitors 300 yards away on the brow of the quarry. The quarry was then cleared of men, and the signal "all clear." having been given, the cables were attached to the terminus, and by a simple downward pressure of the handle a current of electricity was dispatched along the cables and through the fuses, exploding the seven shots simultaneously. On examination it was found that the whole mass had been dislodged and brought down into the quarry, the stone by measurement weighing over 700 tons.

The second experiment took place in an exceedingly tight place without the presence of joint, seam, or bed to cut to—in fact, the workmen and practical gentlemen present spoke of the test as a very severe one indeed, and questioned whether or not it was possible to get the whole at one firing. There was no loose end whatever, as the rock slanted and died away into the bottom of the quarry the surface was very knurly, which bespoke its defiant toughness. The face was 10 ft. by 70 ft. long; seven holes were put in on an average of 9 ft. each, charged with 3½ lbs. of dynamite; these were fired by electricity similar to the first experiment, and resulted in the whole bed being completely smashed up and fractured for yards past the boundary of the holes, getting at least 600 tons.

Experiments were then directed towards some six or eight huge blocks in the bottom of the quarry; these were estimated by measurement to weigh 100 tons each; holes were put in from 2 ft. 6 in. to 3 ft. 6 in. deep, and fired with a time fuse. The effect the dynamite had on these was wonderful, the monster blocks being shivered to pieces mostly suitable for loading up. A block weighing some 15 tons was then broken by placing a few cartridges on the surface without a hole, some clay being put over them; this shared a similar fate to the other blocks, for on being touched with the crowbar it fell into pieces from the severe shock it had received, much to the evident delight of the quarrymen, who averred it could not be broken. On the manager (Mr. Boag) going into figures it was found that the whole of the stone blasted had been satisfactorily got for 1½d. per ton all round, which was considered very low.

The experiments now being over, the visitors thanked Messrs. Johnson and Shepherd for the treat which had been afforded them of witnessing the effects of electricity for exploding shots, and said the experiments had been a thorough success. The party then returned home by train after spending a very enjoyable day.

AGGLOMERATING SMALL COAL.

The machines in general use for the purpose of agglomerating small coal which produce fairly good results are complicated, necessitate a great space, and are always costly. Usually in these machines the complication of the parts and sometimes the uncertainty in the working thereof render frequent and in some cases heavy repairs necessary. The object of the invention of Mr. G. J. P. COUFFINHAL, of Paris, has been to reduce to the minimum the number of pieces composing the machine, so as to have, consequently, as little keeping in repair as possible, to obtain always equally good results by means of a pressure regulator, and to assure absolutely the intermittent movement of the moulding plate by a suitably formed cam, the arrangement of which always allows it to be driven at a great speed.

The complete apparatus may be thus described. A suitable steam-engine is fixed on the agglomerating machine. This steam-engine is not of any particular construction; it may be replaced by any driving power. The shaft of the engine or other power actuates a beam by means of suitable toothed gearing and a crank pin fixed on one of the wheels. The extremity of the small arm of a lever compresses at each stroke, by means of a moulding plunger, the substance contained in each successive matrix formed in a revolving moulding plate. The delivery from the mould or matrix is carried on at the same time as the compression by means of counterbalance levers, and at the matrix diametrically opposed to that in which the substance is being compressed. Each brick or block thus delivered is received on a table just as it falls from its matrix or mould, and may be thence directed at will without concussion either into a shoot or on to an endless band.

A pressure regulator comes into action at the moment the moulding plunger reaches the end of its stroke, and consequently at the moment when the pressure is greatest (which corresponds with the dead point of the crank pin which actuates the beam). This regulator is composed of a piston suitably packed and acting in a hydraulic cylinder firmly attached to the frame of the apparatus. This regulator has two valves, one opening outwards from the cylinder and the other inwards. It will be perceived that if the moulding plunger, while compressing, finds a greater resistance than the proportional resistance which is given by the water held in the apparatus by the first-named suitably arranged safety valve, this valve will be raised and the piston and beam will rise until the crank pin has passed the dead point. The safety valve will then immediately close and the whole will descend by its own weight. The piston in descending will draw down the water which had escaped and which will be returned through the valve opening inwards. It will only be necessary to regulate suitably the position of the central hole of the beam by means of small sliding blocks in order to cause the regulator to act at each oscillation of the beam, and thus to give a uniform pressure on each brick or block. This pressure may also be regulated at will by varying the load of the safety valve by a greater or less tension of the spring. This arrangement of valves may be replaced by an air reservoir, the pressure of which would act constantly on the piston. A small pump moved by the moulding or delivery plunger would produce the compressed air and compensate for any possible leakage.

In order to produce the intermittent motion of the moulding plate, which should present successively each of its matrices beneath the moulding and delivery plungers, two bevelled wheels actuate a vertical shaft, which carries a face cam of suitable form. This cam moves the moulding plate by means of pins or rollers fixed thereon, the number of which is equal to the number of matrices or moulds, and causes it to turn for a distance equal to that between the said matrices or moulds. It should be remarked that at the commencement of the movement the pin or rollers on the plate is very near the centre of rotation of the cam, the plate is, therefore, moved at a comparatively slow speed, which increases during the movement of the plate, and decreases and ceases altogether at the moment when it should stop.

CASTING METALS UNDER PRESSURE.

The invention of Mr. W. TAYLOR, of Panteg, relates firstly to a mode of giving compression to molten metal when supplied to rotating or revolving moulds, the object being to impart pressure to such metal in excess of that which is due to the centrifugal action imparted to the metal; and, secondly, to means for increasing with safety the centrifugal action of rotary moulds, which action is limited by the speed at which it is safe to drive them. When casting, say, a ring with an inner flange, according to the first part of this invention, he forms an expanding core of segment-shaped pieces, between which are fitted wedge shaped pieces, the whole forming on their outer periphery a counterpart of the inner periphery of the ring intended to be cast. A passage or passages or runners are provided for conducting the molten metal from the centre of motion of the mould to the inner periphery thereof.

The core being arranged concentrically in the mould it will, when a rapid rotation is given to the mould, expand to its full size, that size being limited by an annular stop formed for it in the mould. Molten metal being now run into the space between the core and the mould the head of metal will force back the compound core against the forward pressure which it receives due to the centrifugal action put upon its component parts, which being made of iron or other weighty material will offer considerable resistance to the accumulating mass of molten metal. Thus not only will a sound casting be secured but also one showing great density of metal. This compound core being free to contract in diameter under the cooling of the metal there will be no tendency for the casting to fracture or adhere to the core while the cooling takes place.

To produce castings such as projectiles, whether hollow or solid, from metal under pressure, Mr. Taylor arranges the moulds radially in a mould box, and entering the metal at the outer end of the mould he closes the inner end of the mould with a sliding core or cover, which by the centrifugal action imparted to it will advance against the running metal and compress the same in the mould. The cores or covers will in this case move forwards as in radial guides and contract the mould to the capacity desired. It will be readily understood that the limit of safety as respects the driving of the rotary moulds or mould box to obtain a dense casting may be soon reached, and therefore the degree of density thereby obtained will be limited.

In order, however, to impart great pressure to the metal in the moulds either with or without the use of a movable core, Mr. Taylor proposes to mount two, three, or more moulds or mould boxes on vertical spindles set on a rotary frame and arranged equidistant from each other and from the shaft on which the frame is mounted. To these moulds or mould boxes rotary motion will be given, and the whole will revolve around the central shaft after the manner of a sun and planet motion. The molten metal to be supplied to the moulds will pass from a central supply pipe, or channel, or feeder on the rotary frame through branch pipes or channels to feeders which severally connect by a gland with their respective rotary moulds. Each mould or mould box is thus left free to rotate while it receives the molten metal at a pressure due to the centrifugal force imparted to it by the rotary frame. The metal entering the mould box at this increased pressure will now receive a still further increase of pressure from the independent rotary motion of the mould box, and thus a dense casting will be secured without subjecting the apparatus to undue strain by driving it at a speed beyond the limit of safety. Rotary motion may be imparted to the moulds or mould boxes by means of driving bands or gearing connected with the central or rotary frame shaft.

CRUCIBLE STEEL CASTINGS FOR MINES.

With cheapened processes and increased knowledge in the manufacture of steel castings, the objections hitherto urged against their use, such as uncertainty in quality and want of soundness, cannot be sustained; and, consequently, the transition from iron to steel is being gradually but surely accomplished. Taking advantage of this fact, the Savile-street Foundry and Engineering Company, of Sheffield, have issued a new catalogue of crucible steel castings for mines, in which it is pointed out that one important result attained by the adoption of cast-steel is that the engineer can secure a maximum of strength with a minimum of weight, and that the cast form enables a better sectional disposition of the metal where required, besides contributing to improved design.

To the machinist and constructive engineer this has always been an important consideration, whilst the mining engineer has perhaps so far, more largely than any other, availed himself of steel in reducing the dead load in the conveyance or raising of minerels, notwithstanding its high price. In the catalogue in question a number of illustrations are given which will serve to show the thousand and one uses to which steel castings are successfully applied, but there are many others which will readily suggest themselves. It may be generally stated that wherever cast-iron has been used the same can, with the facilities and experience at command, be produced in steel of one-third the weight and of much greater strength and durability.

It is understood that the Savile Foundry and Engineering Company will exhibit at the Royal Agricultural Show at Kilburn, on June 30 (stand 418, machinery in motion), several specimens of Hall's crusher, showing its different applications. Amongst them is a portable crusher which greatly simplifies the operation in a works, and must reduce the cost of working. Here the larger fragments of material pass through the patent Multiple Action Crusher, and immediately into a pair of chilled iron rolls, where they are are brought down to the size of peas and beans. Then they can be taken by an elevator straight to the mills—situated upon a floor above or in any convenient position, and this without any attention or care, and by once handling the stuff, or by the employment of suitable screening apparatus, the various sizes may be automatically classified.

The operation of crushing or breaking and pulverising can be conducted separately or together by simply disconnecting the shoot which conveys the materials from one to the other. Hall's Multiple Action Stone-Breaker is exhibited, mounted upon travelling wheels, with screening apparatus and special cubing jaws, for producing an even sample of road metal with little waste upon the system advocated by Mr. Hall for some time. Baker's Patent Rotary Pressure Blowers for producing a forced blast and for ventilating, are shown in operation, also the Patent Rotary Pump constructed on the same plan as the blower. Altogether the exhibits will be interesting and extremely useful.

GOLD MINING IN AUSTRALIA.—The acknowledged falling off in the gold production of the colony of Victoria has induced the Ballarat Mining Board to ask for Government assistance. At a recent meeting a resolution was unanimously adopted stating that, as the falling off "is in a great measure due to the want of sufficient capital, and as the miners have paid by way of special taxation millions of pounds from which they have derived no special benefit, it is now the imperative duty of the State to afford such assistance to the mining industry as will assist in restoring it to something like its old form." The resolution recommends further that not less than 100,000*l.* should be voted by the Colonial Parliament for the purpose. The Melbourne Argus says that a considerable impulse has been latterly given to mining in the Ballarat district, hitherto the most valuable alluvial gold-field in the colony, by the discovery of an extensive quartz reef. The shares of the Band and Albion Consols Company, on whose claim the reef had been found, were selling at five times the price obtainable a few weeks before the discovery, and the miners generally, who were previously becoming despondent, had been much encouraged. An important gold discovery is also officially reported from the Shoalhaven district, in New South Wales.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

THE BRYNKIR BRICK, TILE, AND TERRA COTTA COMPANY (Limited).—Capital 10,000*l.*, in shares of *1l.* To purchase land held by Mr. Ellis Williams, and to carry on the business of brick, tile, and terra cotta manufacturers. The subscribers (who take one share each) are—H. Tregent, 207, Vauxhall Bridge-road; A. Welton, 25, York-street; A. B. Triggs, Highbury; A. W. Maberly, Exeter Hall; G. Wells, Denmark-street; C. Tyler, 28, Commercial-road; J. Tobin, 14, Alexander-square.

GRAND HOTEL AND MANSIONS COMPANY, WEAR BAY, FOLKSTONE (Limited).—Capital 100,000*l.*, in shares of 10*l.* To purchase or otherwise acquire land on the East Cliff, and to erect an hotel, houses, and mansions. The subscribers (who take one share each) are—J. H. Stephenson, 3, Newman's-court; A. W. Maberly, Exeter Hall; W. Russ, 9, Victoria Chambers; G. Acock, Acton; C. Miners, 9, Victoria Chambers; F. Farebrother, 2, Lancaster-place; E. Robinson, 15, Sidmouth-street.

GREAT YARMOUTH AMICABLE SHIPPING INSURANCE ASSOCIATION.—The mutual insurance of ships and shares in ships in which the members of the company are interested as owners or part owners, also the freight and earnings of such ships. The subscribers are—T. W. P. Brown, Great Yarmouth; W. J. Foreman, Great Yarmouth; J. W. Welton, Great Yarmouth; M. N. Barber, Great Yarmouth; J. H. Fellows, Southtown; B. H. Press, Southtown; G. Wright, Great Yarmouth; W. Jackson, Great Yarmouth.

THE BRITANNIA MILL MANUFACTURING COMPANY—Great Harwood (Limited).—Capital 6000*l.*, in shares of 300*l.* The acquisition of mills, manufactories, or buildings at Great Yarmouth and elsewhere, for the purpose of manufacturing raw cotton-wool, silk, flax, and yarn. The subscribers are—R. C. Mercer, Clayton le-Moors, 2; T. Moorhouse, Great Harwood, 4; J. Hanson, Reshton, 2; R. Brunton, Great Harwood, 2; B. Davies, Great Harwood, 2; W. Eyley, Blackburn, 2; J. Birtwistle, Great Harwood, 1; W. Birtwistle, Great Harwood, 1; W. Ratcliffe, Great Harwood, 2.

SOUTH LONDON DWELLINGS COMPANY (Limited).—Capital 50,000*l.*, in shares of 50*l.* To provide in Lambeth or elsewhere in the suburbs of London suitable accommodation for the working classes, by the purchase and erection of buildings and hereditaments for residence. The subscribers are—H. R. Brand, 104, Queen's Gate, 1; A. H. Grosvenor, 35, Park-street, 1; Emma Cons, 17, Grittleton-road, W., 2; K. M. Lyell, 9, Cornwall Gardens, 1; E. Hart, 38, Wimpole-street, 1; A. C. Mitchell, Corsham, 3; W. Shaen, 8, Bedford-row, 2.

THE LONDON WORKS (Limited).—Capital 15,000*l.*, in shares of *1l.* Adopting an agreement made between Ezra J. Coates, J. Adams, and W. P. J. Coates, purchasing the business and goodwill therein mentioned, and carrying on the business of dealers in wool, cotton, jute, flax, hemp, &c. The subscribers (who take one share each) are—W. P. Pittar, 6, Radcliffe-square; E. J. Cootes, 191, Gresham House, W. Phillips, 50, Gracechurch-street; E. D. Leverson, 18, Queensbury-place; P. M. Pittar, 50, Gracechurch-street; J. A. Adams, Lewes; J. E. Percival, Woodford.

THE YNYSMENDWY TIN-PLATE COMPANY (Limited).—Capital 20,000*l.*, in shares of 100*l.* The purchasing or otherwise acquiring coal and tin works, charcoal works, coal, iron, or any other mines and minerals, and to carry on the business of miners, smelters, engineers, &c. The subscribers are—J. Williams, Pontardu'an, 2; J. Davies, Clydach, 1; W. Hopkins, Pontardawe, 3; J. Rees, Pontardawe, 5; D Jenkins, Pontardawe, 1; T. Rees, Pontardawe, 1; J. Hopkins, Pontardawe, 1.

THE EQUITABLE PERMANENT INVESTMENT AND LOAN SOCIETY (Limited).—Capital 15,000*l.*, in shares of 3*s.* To receive for investment from the members moneys by instalments, and to pay upon them a fixed sum of money, together with a certain proportion of the profits made by the company, subject also to reductions. The subscribers (who take ten shares each) are—J. Mason, Rotherham; J. Fawcett, Rotherham; R. H. Haggard, Rotherham; W. Easton Rotherham; H. Aizlewood, Rotherham; J. Lund, Rotherham; H. Hart, Rotherham.

THE BALTIMORE AND BARROW LIVE STOCK COMPANY (Limited).—Capital 75,000*l.*, in shares of 50*l.* To purchase in the United States and elsewhere for importation live cattle and other animal produce, to deal in and vend such. The subscribers (who take one share each) are—R. Potter, Stonehouse; J. R. Holland, 57, Lancaster Gate; J. Smith, Barrow-in-Furness; J. Fell, Barrow-in-Furness; T. A. Currey, 14, Great George-street; J. Ramsden, Barrow-in-Furness; W. Petch, Barrow-in-Furness.

THE UNITED AFRICAN COMPANY (Limited).—Capital 250,000*l.*, in shares of 5*l.* To acquire and carry on trading stations and depôts in Africa or elsewhere, and to acquire by purchase any business or property. To carry on the business of merchants, bankers, commission agents, &c. The subscribers (who take one share each) are—J. S. G. Taubman, Douglas; A. Erskine, Tunbridge Wells; A. H. G. Taubman, Naval and Military Club; J. A. Crofts, Putney; A. Miller, Glasgow; J. Edgar, Manchester; G. D. G. Taubman, Naval and Military Club.

THE STIRCHLEY NAIL COMPANY (Limited).—Capital 50,000*l.*, in shares of 20*l.* To carry into effect an agreement, and to carry on the business of patent wrought nail manufacturers, Salop. The subscribers are—J. Maddock, Admaston, 50; W. Edwards, Wolverhampton, 50; H. A. Sheridan, jun., Cleveland, Ohio, 50; W. Maddock, Admaston, 50; E. Farriday, Oakengates, 50; T. Jervis, Salop, 50; J. Bradshaw, Wellington, 10.

SULPHATE OF BARYTA.—This mineral was scarcely known or used in Europe 50 years ago, but the Chinese have used it in the manufacture of the finest description of porcelain, and also for agricultural purposes, for thousands of years, and it appears its application in the growth of certain crops is marvellous. Capt. Thomas, of Cappagh, Ballydehob, we are informed, after a long and patient investigation of the subject, has discovered a fertilising manure of astonishing power, the principal ingredient in which consists of a preparation of the sulphate of baryta.

ANCIENT COLCHESTER.—Few places in the United Kingdom are of greater interest to the community than the ancient town of Colchester—the birthplace of Constantine the Great, and the metropolis of Old King Cole (or, as he was known to the Romans of the third century, according to the Colchester "Oath Book," Coel Rex Britonum)—and our esteemed correspondent, Mr. JOSEPH YELLOLY WATSON, J.P., F.G.S., who for a greater number of years than we care to look back to has made that locality his home, has now issued (Colchester: Benham and Harrison, High-street) a very proper Supplement to his "Tendring Hundred in the Olden Time" under the title of "Sketches of Ancient Colchester." That Mr. Watson had a town to deal with concerning which many interesting records exist cannot be doubted, but the enormous amount of labour and research required to discover where those records are to be found, and to separate the interesting from the uninteresting, can only be appreciated by those who have attempted similar work. A more interesting volume than Mr. Watson has now written could not be desired, whilst the careful and systematic manner in which he has arranged his material gives the book great value for archæological and historical reference; it is one, moreover, which should be read by all who take an interest in the early progress of the nation, no matter in what part of the country they may be located.

THE JOHN CLARE NATIONAL TESTIMONIAL FUND.—Mr. John Clare, on whose patents the metal navy of England is solely based, appeals to the public for subscriptions to repay the money he sunk whilst developing the climax of metal shipbuilding for national defences afloat. Lord Palmerston, Mr. Secretary Cross, Sir Thomas Bazley, M.P., H. B. Sheridan, M.P., the Hon. A. F. Egerton, M.P., Mr. Biggar, M.P., Mr. O'Donnell, M.P., Mr. Parnell, M.P., Colonel Marcus Beresford, M.P., ex-Prime Minister Gladstone, and others have admitted the immense value the inventions of Mr. Clare have been to England, and expressed their sympathy at the position in which he is placed by the Admiralty delaying settlement of his claims. Contributors will please append names and addresses, so that acknowledgment ensue from John Clare, H.M.S.B., Liverpool.

Mining Correspondence.

BRITISH MINES.

ABERLLYN.—John Roberts, July 9: The end driving on the heading side of the lode at No. 2 adit is hard, and the lode rather poor. As there is rich blende in the shaft about 20 fms. in advance of this I do not think but what the lode will soon recover its former value; set again to four men, at 7*l.* per fathom. The lode on the shale part is still looking very well. There is between the shale and the blende a hard crust of black capel about 2 ft. wide, and the course of blende is about 2 ft. wide also, worth about 3 tons to the fathom. We are taking down the lode now. We have now cleared in the deep adit on this shale 30 fms., and how much further the end is driven we have no idea. There is a hard wall on the hanging side, and nothing has been cut through on the opposite side, so it would be a good trial to drive across on both sides. Surface work is going on very satisfactorily. We are carting down the blende to the station.

ASSHETON.—Joseph Garland, July 9: In Lindow's shaft, as nothing can be done advantageously in the 10 fm. level till ventilation has been effected, a pare of men have been put to rise against the winze being sunk from the adit level; we expect to communicate in the course of a few days. In Gundry's shaft fair progress is being made in clearing the 20 south. In Mawr shaft we have made a fair start to drive the 50 south, on the north and south lode; the ground has become somewhat easier for driving, and the lode is improving in appearance and promise, and yields saving work. There is no particular change in the pitches; they are yielding a fair quantity of ore. We sampled on the 2nd inst., for sale to-morrow, 18 tons of lead ore.

BLAEN CAELAN UNITED.—Jonathan Pell, July 10: I have not yet holed to the 30 driven west from winze, but have only 4 ft. or 5 ft. remaining to open communication. The water is sinking in the winze and coming through the forebreast of the 30 to the engine-shaft. The lode maintains its value. All other points remain without any alteration to notice, and everything is progressing satisfactorily.

BLUE HILLS.—S. Bennetts, P. Vian, July 7: The north lode in the 30 east end is 1½ ft. wide, and worth 6*l.* per fathom. A stope in the back of this end is worth 8*l.* per fathom, and two stopes in the bottom are worth about 12*l.* per fathom each. In the shaft sinking below this level the lode is worth 7*l.* per fathom.

BODIDRIS.—H. Hotchkiss, July 4: The 60 level on Maes-y-Pwll lode east i still in hard ground, and lode close; the cutting down of the rise and securing the same from bottom of the new shaft to the 60 level is progressing very well; but we have a great deal to do here before we can have the kibbles through to this level, as we have some hard cranches to take out, besides timbering it and lacing the same from top to bottom; this work will take nearly a month to accomplish, but no time shall be lost in getting it done; we are also busy on surface removing the whin, &c. In the 45 end east on middle lode we have a joint come in from the hanging side of the level which bears 10° east of south and west of north, and dipping in the same direction as the lode; this is, I believe, a string belonging to the main lode. We have beautiful lodestuff in the forebreast of the level, containing very rich cubes of lead ore, and looks very promising.

— H. Hotchkiss, July 9: The 60 end east on Maes-y-Pwll lode is showing signs of an improvement in the character of the lode. On the hanging side is about 6 in. wide of working ground, which contains a little blende ores and more carbonate of lime. There is no change in any of the other places calling for remark, but all points are going on regularly and with all speed.

BWLCH UNITED.—Nicholas Bray, July 8: I am just returned from the mine, and I am pleased to say that the foundry people are making good progress in erecting the new wheel, and unless prevented by severe weather, which has hitherto hindered them, it will be ready, I think, to commence the painting about Monday or Tuesday next; in the meantime we shall have to make a new lip to convey the water over the wheel, and wedge on the new crank, besides other small jobs, all of which I hope will be finished by the latter part of next week.

CAMBRIAN MINES.—T. Glanville, July 5: Esgair Fraith, Eastern Shaft: I am glad to say that in cross-cutting north into the lode from bottom of shaft we have a lode of copper ore 1 yard wide; this must be a continuation of the ore seen in the level above. We shall at once commence to divide and case shaft from the 70 yard level to the bottom in order to draw from this point with our machine kibbles. In the 70 yard level, east of shaft, we have not taken down the copper part of the lode since my last report. In the 46 yard level, east of shaft, we have cut into a very fine branch of copper 18 in. wide. On Monday next we shall put men to drive the 20 yard level, east of shaft, to prove the continuation of the ore seen in the levels below, as from what we have already discovered I have no doubt large deposits are lying to the east of shaft in entirely virgin ground.—Esgair Hir: In opening the shallow level in the western part of the mine we have a lode 2 ft. wide, composed of friable spar, intermixed with iron pyrites and a small portion of lead ore; the indications at this point are such that doubtless large quantities of ore will be met with at a deeper point.

CLEMENTINA.—J. Roberts, W. Sandoe, July 9: We are about finishing up the work here, and all being well, we shall start the large wheel on Saturday,

COMBMARTIN.—J. Comer, July 10: The lode in the winze sinking below the adit level is not quite so rich for lead as when last reported, the leader part of the lode being a little more intermixed with blende, white iron, and quartz, although the lode has a very strong appearance, and I have no doubt it will improve for lead again in a few days. All the other points of operation in the mine continue to look much the same as when I last advised you.

DE BROKE.—J. Phillips, July 9: In the 35 east we are driving on the caunter and proving the full size of the main lode at the intersection; the caunter lode is larger than in the 25, and is producing good stones of lead and copper ores, and the main lode carries a good proportion of crystallised quartz and calcspar, with large spots of lead ore. The stope in the 25 east continues to produce 30 cwts. of lead ore per fathom. The other stope, east and west of winze, below the 25, is rather bunchy in its yield, but has often been so before. The machinery and pitwork is all right, but we have a little water in the bottom level, owing to very heavy rainfall almost daily.

DENBIGHSHIRE CONSOLIDATED.—R. Prince, A. Francis, July 10: The new cross-cut north has been driven 17 yards, and the progress is satisfactory. In our driving south out of the 66 west we seem to be close to a fine body of lead ore; in the sand we are finding lumps of ore, some of them weighing nearly ½ cwt. The position of this working is most favourable for great deposits of mineral, and we expect in our next to announce satisfactory news. We are glad to say that there has been a decided improvement in the appearance and yield of ore from the 112 last main lode: its width has increased to over 3 ft., and we are leaving in the roof of the level some very nice lead, which can be profitably worked at any future time. There is now a feeder of water issuing from the forebreast, and our prospects here are highly satisfactory.

D'ERESBY CONSOLS.—J. Roberts, W. Sandoe, July 9: The only change to notice in the end driving towards Cobbler's lode is, there are branches of spar crossing the end, from which we apprehend we are near the lode; set to six men, at 15*l.* per fathom.

D'ERESBY MOUNTAIN.—John Roberts, W. Sandoe, July 9: The lode in No. 1 end is about 1½ ft. wide, with a good mixture of blende and spots of lead; set to two men, at 6*l.* per fathom. No 2 end is very much the same as it has been for some time past—a slight mixture of blende and a nice priany spar on one side; set to two men, at 7*l.* 10*s.* per fathom. The stope in the bottom of this level is without any particular change since last week. The lode towards the rise is pinched up very small, but in the north end of the stope the lode is much wider, and we think will make very much better as we advance with the stope, which is about 6 ft. high. This is set to four men, at 4*l.* 10*s.* per fathom. The stope in the back of No. 3 contains very nice lead, and, being exactly below the better lode in the stope above, we have an idea that it is the same bunch, and if so it will be a good piece of stoping ground. The stope at No. 4, on the Hafna lode, is not looking so well, except in one place, where we have put two men to rise up a little way to prove it a little further. We are progressing favourably with the spilling through No. 5, considering the width of the run, about 13 ft. wide. We have accomplished about 2 fms. this week. From the nice patches of lead we see left in the lode by the sides we feel very much encouraged with regard to the future. Whatever we may find in the sump at the bottom, it is quite clear that the old men had a fine course of lead, and that the working was suspended for reasons stated by the old people now living.

DEVON GREAT CONSOLS.—I. Richards, July 10: Wheal Josiah: New South Lode Shaft: In the 130 west the lode is 2 ft. wide, consisting of capel, quartz, peach, mundic, and a little copper ore. In the 115 west the drivage is being continued south for intersection of the lode, and the ground is favourable for progress.—Wheal Emma, Inclined Shaft: In Dawe's cross-cut, south at the 190 east, the ground is favourable for driving. In the 137 east, east of Friend's cross-cut, the lode is 5 ft. wide, consisting of capel, quartz, peach, fluor, mundic, and a little copper ore of good quality. In Northway's winze in the bottom of the 162 east the lode is 4 ft. wide, composed of capel, quartz, peach, and copper ore, worth 3 tons, or 9*l.*, and 3 tons mundic per fathom.—New Shaft, New South Lode: In the 205 east the lode, 2 ft. of which is being carried, is composed of capel, quartz, fluor, mundic, and a little good quality copper ore. In the 205 west the lode is of the same size and general character as that in the eastern drivage. In the 190 east the lode, 4 to 5 ft. of which is being carried, is composed of capel, quartz, fluor, prian, and copper ore, worth 4 tons, or 12*l.*, and 5 tons of mundic per fathom. In Knott's winze in the bottom of the 190 east the lode, 5 ft. of which is being carried, is composed of capel, quartz, peach, fluor, and a small quantity of good quality copper ore, and for length of winze, 9 ft., is worth 9 tons of mundic per fathom. In the 190 west the lode, 5 ft. of which is being carried, is composed of very fine capel, quartz, peach, prian, and copper ore, and is worth 2 tons, or 6*l.*, and 8 tons of mundic per fathom. In the 175 east the drivage is being carried on by the side of the lode. In the 175 west the lode is 4 ft. wide, and worth 5 tons of copper ore, or 15*l.*, and 3 tons mundic per fathom. In the 115 east the lode is 4 ft wide, composed of capel, quartz, peach, prian, mundic, and a little copper ore of good quality. In the 100 east, on the south part of the lode, the lode is 3½ ft. wide, composed of capel, quartz, peach, mundic, and some good quality copper ore. In the 175, east of the cross-cut, at the Railway shaft, the lode is 3½ ft. wide, composed of capel, quartz, prian, peach, copper ore, and worth 10*l.*, and 3 tons of mundic per fathom.

DUBBY SYKE.—William Vipond, July 4: We are still in clay in the new shaft; it is now down a little over 3 fathoms; the men have seen two or three small samples of ore this week about the size of peas. This would seem to indicate that the shaft cannot be far off, if it is not upon the vein when the sill is met with.

EAST CHIVERTON.—R. Southey, June 8: We are making good progress in sinking the engine-shaft below the 74; the standing lift is fixed in the bottom of the 74, and everything put in first-class working order, so that I do not anticipate any mishaps while sinking to the 190. Next Saturday being setting day I intend to set the shaft to sink and complete the same to the 190 for a lump sum; I adopt this course in order to stimulate the men to get the work done as quickly as possible. During the past month we have not driven through much ground in the 74, in consequence of hindering the shaftmen, but now we have got below the level we shall resume this drivage; there are good indications here that the lode is going to improve.

EAST ROMAN GRAVELS.—A. Waters, July 10: The engine-shaft is now down 8 fms. 2 ft below the 86. We have suspended the driving of the 86 south for the present, and put the men to cross-cut west to prove the existence or otherwise of of another portion of the lode; set to four men, at 7*l.* 10*s.* per fathom. The 75 to drive south, by two men, at 4*l.* 10*s.* per fathom; lode 2 ft wide, worth ¾ ton of lead ore per fathom, and looks like improving. No. 1 pitch, in the back of this level south, to three men, at 3*l.* 10*s.* per ton; worth 1¾ ton per fathom. No. 2 pitch, in the back of ditto south, by two men, at 4*l.* 10*s.* per ton; worth 1¾ ton per fathom. This pitch is going forward in front of the 75 end. Pitch in the back of the 63 south, by two men, at 4*l.* per ton; worth 1¼ ton per fathom. Pitch in the bottom of the 50 north, by four men, at 4*l.* 5*s.* per ton; worth 1 ton per fathom. Pitch in the back of the 50 south, by two men, at 4*l.* 15*s.* per ton; worth ¾ ton per fathom. Pitch in the bottom of the 46 north, by two men, at 5*l.* per ton; worth ¾ ton per fathom. Pitch in the bottom of the 40 north, by two men, at 5*l.* per ton; worth 12 cwts. per fathom. Pitch in the bottom of the 20 south, by two men, at 4*l.* 15*s.* per ton; worth ¾ ton per fathom. Tributers pay all cost, including 1*l.* per ton for dressing.

EAST WHEAL LOVELL.—Richard Quentrall, July 9: There is no alteration in the south shaft since my last report. We are making good progress in sinking the shaft at Sevorgan. I am glad to say that the lode is looking very promising, and is producing quite as much tin as at the meeting.

GAWTON.—George Rowe, George Rowe, jun, July 5: The lode in the 117, fathom level east is 5 ft. wide, yielding capel, spar, and mundic, mixed with good quality ore. The lode in the 105 fm. level east is improving, and showing a very kindly appearance, yielding 12 tons of arsenical mundic and ore per fathom. The lode in the stopes in the bottom of the 105, west of winze, is worth 8*l.* per fathom. Nos. 1 and 2 stopes in the bottom of the same level, east of said winze, is worth 6*l.* and 10*l.* per fathom. The lode in the stopes in the back of the 105 is worth 9*l.* per fathom.

GLASGOW CARADON CONSOLS.—Wm. Taylor, W. J. Taylor, July 8: The 102 east, on south lode, is letting out more water, with a better appearance; we are looking for improvement as it gets further off the influence of the cross course. No change to report in the 102 east, on north lode, but the winze coming down before this end from the 90 is looking very well, worth 15*l.* per fathom, and the ground easy for working; we hope this will continue down through. No change in the 90 east, on north lode; east, on south lode, is still divided by a horse; we expect it will improve to former value when the parts of the lode unite. In the 90 west, on north lode, the men will finish their bargain cutting down ground in the bottom of the winze to make the level in a few days; we shall then drive west from the end of this winze towards No. 2, west from the 78. The stopes and pitches, on the whole, remain about the same value as last reported. We sampled yesterday our month's ore, computed 190 tons, which will be sold on the 17th inst.

GORSEDD AND MERLLYN.—W. Edwards, July 10: In the 70 east the men have driven 1 yard 2 ft. since the last report, but the ground continues hard, although the lead is good, and promises improvement. In the 70 west the men have been driving north, and since last report have gone 3 yards 2 ft., and am glad to say have come into some nice lead ore. About 2 yards has been driven in the 90 east since my last; the ground improves very much as we drive. There is more blende in the lode, of a higher colour than that we met with in the 70, and the lead which was at the bottom of the level is now rising up to the roof and improving.

GREAT HOLWAY.—July 10: Garden Shaft: The sump or winze sinking in the bottom of the 55, east of shaft, is going down in a good lode of blende. I should say we have drawn up fully 5 tons, being the produce of about a week's work, and the lode is now looking very well.—Surface: The bad weather sadly interferes with the masons in connection with the capstan, &c., but the engine is complete.

GREAT RETALLACK.—T. Harris, July 5: The lode in the stope, west of the boundary shaft, is not looking so well for blende, now worth from 1 to 1½ ton per fathom.

GREEN HURTH.—Wm. Vipond, July 4: The end of the 30 south is still worth 4 tons of ore per fathom; the best ore going down in the sole—we see no cheeks on either side, and the ore in this end looks well for continuing. The north end is still in the hard poor ground mentioned in the last reports, and worth about 8 cwts. of ore per fathom; I cannot say that I feel the slightest alarm at this end being poor just now—we had it very like what it now is for a short distance in the adit level above, and I shall be surprised if we have not another run of orey ground before coming to the incline sump. As we could scarcely keep the washers going with this end so hard and poor I have started the men to stope the roof of the 30 going north. The results so far are about the same as in driving; it is yielding 6 or 7 tons of ore per fathom, and shows the vein still bearing good ore higher up than we have yet gone. The incline sump continues in hazle, and is apparently going to be harder than the first one; this may be owing to being a little distance further from the vein. We have delivered 60 bings of ore for the present sale.

HERODSFOOT.—P. Temby, July 10: The lode in the 205 south is 2 ft. wide, and worth fully 15 cwts. of lead per fathom, and it looks promising to further improve. The part of the lode carried in the north end at this level is unproductive; about 3 fms. behind the end the lode is split, and I think the leading part is still standing in the footwall; this we shall soon prove by cutting a plat for the new shaft at this point. The three stopes in the back of this level maintain their productiveness, and are yielding about 15 cwts. of lead per fathom respectively. No lode has been taken down in the rise over the 205 this week; the ground is favourable for rising. In the 190 north the lode is 3 ft. wide, and worth 15 cwts. of ore per fathom; the air in this level is very bad, and I have decided on sinking a winze in the ore ground gone down, which will ventilate this part of the mine, and open ground for stoping. The stope over this level is worth 15 cwts. of lead per fathom. We are daily expecting to communicate the rise from the new shaft to the 175 level; the lode has further improved, now worth 18 cwts. of lead per fathom. When this communication is made we shall at once stope the bottom of the 175, where I think there is a good run of ore ground standing for 14 fms. high. The tributers generally are making fair wages.

HINGSTON DOWN.—T. Richards, July 9: The tribute ground in the back of the 120 continues to produce 10*l.* worth of ore per fathom. In the rise and stope in the back of the 110 the lode is worth 8*l.* per fathom, and is promising. The lode in the back of the 45 east will produce 3 tons of ore, or 9*l.* per fathom. The lode in the deep adit level, driving west, is composed of capel, quartz, peach, prian, mundic, and a little rich copper ore. In the deep adit driving south fair progress is being made.

LADYWELL.—Arthur Waters, July 10: The cross-cut, west from bottom of new shaft, now driven 3 fms. 1 ft., has not yet intersected the lode. The winze below the 16 south is now down 3 fathoms; lode worth 2¼ tons per fathom. The stope in the back of the 16 south is worth 1¼ ton per fathom. Other points as reported last week.

MARKE VALLEY.—Wm. George, J. Stenlake, July 8: We have at present working in different parts of the mine seven stopes, by 30 men, yielding in the aggregate 26 tons of ore per fathom; and 16 pitches, by 33 men, at tributes varying from 9*s.* 6*d.* to 13*s.* 4*d.* in 1*l.* In conclusion, we would remark that although our ends have been generally unproductive during the past quarter, we are pleased to say the various stopes and pitches have turned out better than we anticipated at the last meeting.

MELLANEAR.—John Gilbert, July 9: The lode in the 30 fm. level, west of Gundry's shaft, is 1 ft. wide, and producing stones of copper ore. The rise in the back of this level, west of shaft, is up 10 fms.; the lode is 2 ft. wide, and worth 1 ton of ore per fathom. The lode in the 40, west of shaft, is 1½ ft. wide, and producing a little saving work for copper ore. The lode in the 60, west of shaft, on the south-east part, is 4 ft. wide, and worth 2½ tons of ore per fathom, and the ground is very much better for driving. The lode in the winze in the bottom of this level is 5 ft. wide, and still worth 3 tons of ore per fathom; this winze is down about 8 fms, and the lode will average 3 tons of ore per fathom for the whole distance. The lode in the 60, west of shaft, on the north part, is 1½ ft. wide, and worth 1 ton of ore per fathom. The lode in the 70, west of shaft, is 4 ft. wide, and worth 2 tons of ore per fathom. The winze sinking in the bottom of this level is worth 2½ tons of ore per fathom: the men engaged in stripping down the side of this level have, I believe, discovered the wall of the south-east part of the lode, but we shall be able to tell more about it in a few days; the main lode in this place is 8 ft. wide, and worth 6 tons of ore per fathom. The lode in the 80, west of shaft, is 4 ft. wide, and worth 3 tons of ore per fathom. The lode in the 90, on the south-east part, west of shaft, is 4 ft. wide, and worth 2 tons of ore per fathom; and the ground is still very easy for driving. The rise in the back of this level is up 8 fms., and the lode is 4 ft. wide, and worth 2 tons of ore per fathom. There is no change in the lode in the 100, east of shaft; it is still 4 ft. wide, and worth 1 ton of ore per fathom. The rise in the back of this level, west of shaft, is worth 1½ ton of ore per fathom; this rise is up to 10½ fms., and there are about 2 fms. more to rise to communicate to the 90. Gundry's shaft is down about 6 fms. below the 100, and the men are making very good progress in sinking, but the ground is is a little harder than usual.—Skip Shaft: The 70 cross-cut is now extended south of the main lode about 43 fms.; the ground is very easy for driving, and mineralised throughout. The lode in the 100, west of shaft, is 4 ft. wide, and producing some stones of rich copper and tin ores.

MINERAL CORPORATION OF GREAT BRITAIN.—William Bennetts, July 9: HAFNA AND HIGH HAFNA MINES: No. 3 Adit End: There is no change in the lode calling for any remark since my last report. The lode still looks well. I am pleased to say that we have communicated No. 2 rise in the back of No. 3 level with No. 2 adit, which has well ventilated this part of the mine, and also opened out a large section of good paying ground at surface. We have been very much hindered this week with the heavy rains, but still we are preparing everything as fast as possible. I am glad to say that the large reservoir is filling quickly.

GREAT D'ERESBY MINE.—We are engaged putting down the tramroad at No. 5 adit, which work will be completed to morrow evening.

MONYDD GORDDU.—J. G. Green, July 10: The 34, on the caunter lode, is poor in the drivage northwards, and I have put the men to strip down the eastern side; the lode is worth 25 cwts. per fathom. The drivage in this level on the cross branch from winze is still producing occasional stones of ore. I hope to be through the north side shortly, and to resume the drivage westwards. The lode in the 24 west is bearing more to the west than it has done for some time, and there is a nice footwall, an indication of more compactness and regularity. The lode in the 12 has become much wider during the last few feet driving, and contains more blende, worth 1 ton of lead per fathom. I have drilled the mine throughout to-day on all our recent drivings, and I hope to submit a working plan and section of our operations to date for your inspection in a few days. Dressing going on regularly.

MORFA DU.—T. Mitchell, July 10: The various points of operation continue to look much as usual, excepting the stopes in the back of the 48, where the lode is disordered for the present; we expect this place will improve again shortly as it is in the run of orey ground.

NORTH D'ERESBY MOUNTAIN.—July 4: The lode in No. 2 adit is still looking well. The men are engaged in cutting into the hanging side to prove the width of the lode.

— July 10: We have cut into the hanging side of the lode about 4 ft., and about 3 ft. on the heading side, but have not yet seen the hanging footwall. This proves that the lode is very large.

PANDORA.—H. Nottingham, July 10: We have no change calling for remark in any of the underground bargains this week. We have not been able to clear the 33 of water yet; with the very heavy rain we have had it is as much as the wheel can do to keep it down, and the water has so much increased in the winzes under the 23 that we are hindered in stoping. We are now making an effort to bore through into the rise under No. 1 winze to let down the water. We are making fair progress on the dressing-floors, and have a fair supply of stuff. The reservoirs are nearly all full, a thing I do not remember having seen before at Midsummer.

PARYS COPPER CORPORATION.—T. Mitchell, July 10: The ground in the 90 south is getting a little more favourable for driving, and I am glad to say the forebreast is looking more promising than for some time past. The 90, east of cross-cut, is going forward in kindly ground, intermixed with sulphur and a little copper ore.

PATELEY BRIDGE.—C. Williams, July 10: The Rake vein in the 30 east is 6 ft wide, and of its usually promising character, principally composed of soft spar and gossan, with occasionally strong ribs and patches of ore, and likely to become highly productive again. The same vein in the engine-sump now sinking under the 30 is 7 ft wide, consisting of spar, gossan, carbonate of lead, and blue lead ore, worth 10 tons per fathom; good progress is being made in sinking. Fielding's vein in the 30 north-west is without change, being 4 ft. in width, and worth 1 ton of lead ore per fathom. I have let a tribute pitch in the back of this level to two men at 5l. 12s. 6d. per ton of dressed ore. The tribute pitch in back of 30 east is worth 12 cwts. of lead ore per fathom. Fielding's vein in the 20 north west is 4 ft. wide, and worth 18 cwts. of lead ore per fathom. The same vein in the sump under the 20 north-west is looking much the same as for some time, worth 1 ton of lead ore per fathom. The Lumb vein in the 20 west is at present poor. Dressing and smelting progressing very favourably. The new machinery is working as well as can be expected. We have thoroughly repaired the old machinery, and now we are repairing the fire-box of the old boiler, and covering the new one with Firth's non-conducting composition, which will effect a great saving in fuel.

PENHALL.—S. Bennetts, P. Vian, July 7: The lode in the 70 east end continues much the same as last reported on, worth about 7l. per fathom. The south part of the lode in the 60 east is 1½ ft. wide, and worth about 4l. per fathom. The flat lode in the winze below the 30, east of flat-rod shaft, is worth 5l. per fathom. In the 40 west the rise is worth about 4l. per fathom. The tribute pitches are not quite so productive as they were a month or two since.

PENNANT.—July 10: The stopes in the back of the 60 east are producing large quantities of mineral, and the one in the bottom of the 60 is also looking well, and we are busy at the dressing-floor.

ROMAN GRAVELS.—Arthur Waters, July 10: The new engine shaft is now 9½ fms. below the 110: ground of the usual character. The lode in the 110 north is 2½ ft. wide, but not to value, the end still being in the twitch seen in the drivage of the level (95) above. The lode in the 110 south is 3 ft. wide, worth 1¼ ton per fathom, and improving. The winze below the 95, north of shaft, now down 10 fms. 5 ft., is worth 2 tons per fathom. A stope in the back of this level north is worth 1 ton per fathom. Two stopes in the back of this level north are worth together 4½ tons per fathom. The rise in the 95 south, close to the forebreast, and against the winze coming down from the 80, is worth 1 ton per fathom. Three stopes in the back of this level south, one north and two south of Jack's winze, are together worth 6 tons per fathom. The 80, north of old shaft, is worth 1½ ton per fathom. A stope in the back of this level, south of Powell's winze, is worth 2 tons per fathom. The cross-cut in the 80, south of new shaft, is not yet through the hanging wall part of the lode. The winze below this level, going down upon the 95 end, is now sunk 9 fms. 2 ft.; lode at present worth 1 ton per fathom. Three stopes in the back of this level, south of Wilkes' winze, are worth together 8½ tons per fathom. A stope in the back of ditto, south of Matthews, winze, is worth 4 tons per fathom. The 65 south is worth 2 tons per fathom; we are now driving on the footwall part of the lode only. Four stopes in the back of this level, south of Stokes' winze, are together worth 8 tons per fathom. Two stopes in the back of the 50, south of old winze, are together worth 3 tons per fm. The 40 south is worth 2 tons per fathom.

ROOKHOPE.—T. Tonkin, July 10: Adit Level: The improvement in the stopes on side vein, made mention of in my last report, still holds good, and the yield now is fully 15 cwts. to the fathom; the ore, too, is of a compact and good quality. I see nothing new to mention in the stopes near Gin shaft. 10 cwts of ore to the fathom being still the yield, and the nature of the ground unchanged. In the 15 the stopes near Low shaft, on side vein, are easy to work, and the yield of ore is 10 cwts. to the fathom, a considerable portion of which consists of white lead; also 10 cwts. to the fathom is the yield of ore in the stopes on main leader, near Gin shaft. The stopes above the 25, near Low shaft, on the side vein, are easily worked, and the yield of ore 8 cwts. to the fathom. The stopes on the flat, immediately beneath, are harder, and the yield of ore 12 cwts. to the fathom. The winze from the 42 to this portion of the working has opened up some good stoping ground, and given us greater facilities for working the stopes already laid open. The work is good to get at the pump-sump stopes, and the yield, as seen to-day, 12 cwts. of ore to the fathom. In the 42 the forehead of the drivage east from near Gin shaft is better to work, but contains to day less ore—5 cwts. of ore to the fathom is now the yield. The stopes at the foot of the 4 fathom lime sill are changeable—a portion similar to what I last reported, while in other parts 15 cwts. of ore to the fathom is about the yield. Notwithstanding the stormy weather our dressing operations are going forward as usual, and the machinery works well.

SOUTH CAMBRIAN.—A. Williams, July 9: The lode in the adit level driving east has been pinched up by an oblique channel of softish killas, and is at present not so productive as when last reported. The lode in the rise and winze is without any change to notice since my last. The men throughout the mine are working with good spirit, and are making fair progress with their bargains.

SOUTH CONDURROW.—Wm. Rich, Wm. Williams, H. Abraham, July 8: The 30 end, east of engine-shaft, is very wet, and the lode poor; we have, therefore, suspended the drivage. The 40 end east is worth 6l. per fathom. The rise in the back of this level is worth 9l. per fathom. The 50 end, east of King's, is worth 9l. per fathom. The rise in the back of this level is worth 12l. per fathom. The rise in the 50, west of Plantation shaft, is worth 10l. per fathom. The 50 fm. level west, on north lode, is unproductive at present. The 70 end west yields good stones of tin, and has a kindly appearance. The 80 west is worth 9l. per fathom. The 70, east of King's, is worth 6l. per fathom. The rise in the back of this level is worth 18l. per fathom. The 80 end east is worth 8l. per fathom. The lode in the back of the 93 east is worth 20l. per fathom.

SOUTH DARREN.—H. James, July 10: There is no material change in any of the underground bargains since last week's report.

SOUTH TOLCARNE.—William Rich, James Knotwell, July 9: We have intersected the lode east of the cross-course in the 36, but it is not well defined at present; we are urging on the end to prove the lode into more settled ground. There is nothing new in the rise in the back of the 36.

SOUTH WHEAL FRANCES.—A. T. James, July 9: Pascoe's shaft is about 14 fms. below the 205, and is worth 30l. per fathom for 12 ft. long. The shaftmen will now commence to drive west on a lode worth 15l. per fathom. The 205 fm. level west is worth 10l. per fathom. The same level east is worth 6l. per fathom. The 195 fathom level west is worth 8l. per fathom. The 185 fathom level east is worth 8l. per fathom. The 185 and 175 west are producing low quality tinstuff. The stopes throughout the mine are yielding fair supplies of tin ore, but not in such quantities as formerly, but still sufficient to leave a good margin of profit.

TANKERVILLE.—Arthur Waters, July 10: The 220 to drive east, by six men, at 12l. 10s. per fathom, worth 1 ton per fathom, and improving. The 220 west to drive by six men, at 11l. 10s. per fathom; the lode is 3½ ft. wide, worth 1½ ton per fathom. The 206 east to drive by four men, at 7l. per fathom; the lode is 2 ft. wide, and worth 2 tons per fathom. The 206 west by four men, at 10l. 10s. per fathom; the lode is 5 ft. wide, worth 1 ton per fathom. The winze below this level west by six men, at 10l. per fathom; the lode is 5 ft. wide, worth 3½ tons per fathom. There are six stopes at work in the back of the 206 east, each by four men, at 5l. 10s. per fathom, worth together 13¼ tons per fathom. There are two stopes in the back of the 206 west each by four men, at 5l. per fathom, worth together 2 tons per fathom. The 182 east to drive by four men, at 10l. per fathom; lode at present is split into parts, and not to value. No. 1 tribute pitch, in back the 182 west, by two men, at 5l. per ton. No. 2 tribute pitch, in back of the 182 west, by two men, at 5l. 5s. per ton. No. 3 tribute pitch, in back of the 182 west, by two men, at 5l. 5s. per ton. No. 4 tribute pitch in back of the 167 west by two men, at 4l. 15s. per ton. The tribute pitch in back of the 142 west by four men, at 8l. per ton. The tribute pitch in back of the 130 west by three men, at 5l. 10s. per ton. The tribute pitch in back of the 120 west by two men, at 5l. 5s. per ton. The tribute pitch in back of the 100 west by two men, at 5l. 5s. per ton. The tribute pitch in back of the 92 west by two men, at 5l. 5s. per ton. The tribute pitch in back of the 82 east by two men, at 5l. 5s. per ton. The tribute pitch in bottom of the 82 east by three men, at 5l. 5s. per ton. No. 1 tribute pitch, in back of the 74 east, by two men, at 5l. 5s. per ton; No. 2 ditto, by two men, at 5l. 5s. per ton. The tribute pitch in back of the 6? east by three men, at 5l. 5s. per ton. The tribute pitch in bottom of the 6? east by two men, at 5l. per ton. The tribute pitch in back of the 4? east by two men, at 5l. 5s. per ton.

TEESDALE.—July 3: In the west end forehead there is no further improvement in the quantity of lead ore, though it retains all the mineral appearances and kindliness that can be desired, and might change for the better any day. In the west end stope there is a little improvement both at the middle and bottom parts, though it still keeps rather too stiff and ridery to my liking. The west end rise is still very poor, and hard and slow to move; the men intersected some lead ore in boring a hole straight up, which I expect they will reach in another week to see what it is like. In the east branch there is an improvement in the quantity of lead ore since last report, especially towards the top of the stope, which is all broken and smashed, and easy to work; we ran the Old Man through into his level, in order that it may be worked from the top instead of the bottom. In the Old Man the men are continuing to get part lead ore every day sufficient to pay expenses and a little over.—Dressings: We have been mostly engaged with the slime during the past week, but will commence the bouse again on Monday.

TEMPLE.—July 9: In No. 1 level the lode continues to produce 1 ton of lead ore per fathom. In No. 2 level the lode is 3 ft. 6 in. wide, with lead ore throughout about 15 cwts. per fathom. In No. 3 level the lode is improving in appearance, with small spots of lead, blende, and spar over the end. The stopes in each level are as last reported, producing an average of 1 ton of lead ore per fathom. Surface operations and dressing are progressing satisfactorily. The weather is very unfavourable.

WEST ASSHETON.—Joseph Garland, July 9: The lode in the end of the 40 west is small; it yields stones of ore in places, but not to value. The lode in No. 1 stope in the back of this level has considerably improved, and when last taken down was worth fully 1 ton of lead ore per fathom. No. 2 stope in the same level maintains the value last reported—1¼ ton of ore per fathom; the ore shoot is lengthening. There is no change to notice in the 50 end west. The lode in the 60 end west, the driving of which has been resumed since setting day, has much improved; now yields good stones of ore, and opening out into a strong and promising lode. A stream of water issues from the end; we shall watch the further development of this change with interest. Boundary shaft has been divided and cased to bottom, the shaft cleared to the 80 plat, and the level well nigh cleared to the end, which we find has been driven west 34½ fathoms. The level has been driven by the side of the lode, which has nowhere been cut through; we have, therefore, put a pare of men to cross-cut the lode near the end. On the 2nd inst. we sampled, for sale to-morrow, 42 tons of lead ore.

WEST HOLWAY.—R. Rowlands, July 10: Our new shaft is down 75 ft., and we are making excellent progress therewith, so I trust we shall not be long in completing the pit to the required depth for the working of our splendid east and west lode.

WEST PATELEY BRIDGE.—July 9: Craven Cross Shaft: Excellent progress is being made in driving the 67 north-west, which is now 15 fms. from the centre of the shaft. I have carefully examined and compared the vein in this and the 58, and find the same branches giving out and coming in, and altogether is much stronger, richer, and with more congenial matrix at the corresponding distance from the shaft, and my firm belief is, seeing the vein more defined, with no visible change in the strata, that we have every reason to expect the ore to hold down to the lower level. However, we shall soon get under the ore, unless it is dipping rapidly west, for which an allowance of 9 fms. should be made. The 67 south-east is without any change to notice this week. We have, according to top level, 13 fms. to drive to reach the first run of ore worked above that level. The vein in the 58 is a little wider and harder, the gossan giving way, and more spar coming in, and the ore more solid and looking as rich as ever. I have, therefore, instructed the men to drive in the limerock and afterwards wedge down the ore, as by shooting in the ore some must be wasted, consequently our progress is slower. In the new cross-cut north-east the ground is very tight and hard for driving, having only been able to drive 2 fms. 4 ft. 6 in. last month, which was very good work in the class of ground, but as the limes are dipping in this direction, I anticipate meeting with more favourable ground shortly. In the south-west cross-cut better results have been obtained. We have during the last four weeks accomplished 6 fms. 1 ft., although the drill has been for some time out of order and when repaired only worked about 15 hours per day. These machines take a great deal of repairing; in this hard rock some of the parts are continually getting out of order. We should have another drill to have one in the shop in order and ready to replace the other when required. Other points underground much the same as last week. On surface we have the dressing-floors almost completed, having built new slides, also new jiggers, flat buddles, ties and trunks, and and also removed the water wheel and crusher from No. 2 floors, and laid the floor with strong flags, and is altogether a very good dressing-floor, covered by a substantial building to enable the men to work in rainy weather. We have made tramways to and from the same, as well as repairing the old ones. All this adds to the cost, but will soon repay the outlay. We have at present a good supply of water for dressing purposes, and will soon commence carting another parcel of ore to the mill. We have also made two new cart roads, and repaired the old ones, and after this week will reduce the surface men. You will perceive that this month's cost without the bills is 20l. less than the last.

WEST WHEAL PEEVOR.—W. T. White, July 7: We have set Michell's engine-shaft to sink below the 10, by a full pare of twelve men, 11 fathoms certain; bargain at 23l. per fathom, and if completed against November 1 next are to have a certain amount of prize money. We also set six men to drive east and west on the course of the lode at the 10, at 5l. per fathom, and 5s. in 1l. for all tin raised in the ends; this will give the lode a fair trial at this level, and we anticipate raising a good quantity of stuff therefrom—I hope in the course of a few weeks to have a sampling, when a correct valuation of the lode can be ascertained. We have now eighteen men employed underground, being an increase of six since we intersected the lode.

WEST WHEAL TOLGUS.—July 10: The lode in the 155, west of Taylor's shaft, is 2 ft. wide, and yielding ½ ton of copper ore per fathom. The lode in the 145, west of shaft, is 4 ft. wide, and yielding 2 tons of ore per fathom. The lode in the 145, east of No. 1 cross cut, is 3 ft. wide, and yielding 1 ton of ore per fm. The lode in the 135, west of shaft, is small and unproductive. The lode in No. 5 winze in the bottom of this level, west of shaft, is 1½ ft. wide, and yielding stones of ore. The lode in the 95, west of Richards's shaft, is 4½ ft. wide, composed of spar and spots of copper ore. The lode in the 65, west of shaft, is 2½ ft. wide, yielding stones of ore, but not sufficient to value, and still letting out a good deal of water, which is all coming from the front of the end. We calculate to sample on Tuesday next about 280 tons of copper ore.

WHEAL CREBOR.—John Andrews, July 8: There is little or no change in the mine since the meeting held last Thursday. The winze sinking below the 108 is 7 ft. wide, and is still worth 45l. per fathom. The 108 east is 2 ft. wide, and worth 20l. per fathom. No lode has been taken down in the 120 east for the week, but we shall commence to take it down on Thursday next.

WHEAL CREBOR.—J. Andrews, July 10: I am pleased to inform you that the mine is still looking very well—in fact, there is scarcely any change since I wrote you last. The lode in the winze is still worth 45l. per fathom, which looks well for the 120 east, as it is now down 9 fms. 1 ft. below the 108, and we have only about 2 fathoms further to sink to reach the back of the 120, and as the latter level is now only about 4 fathoms from the winze we may reasonably expect a great improvement here shortly. We shall begin to take down the lode in the 120 east to night, but I think it will not be taken down close to the end before the early part of next week. We have not yet communicated the rise in the back of the 48 with the new shaft, but hope to do so in a few days, as we find we are now getting very near, as yesterday we bored a hole nearly 9 ft. deep in the shaft, and when blasted it shook down a quantity of stuff in the rise, therefore I hope a few days more will effect a communication. We are getting on pretty well towards the next sampling, and at the present rate of dressing I think we are safe to get 150 tons.

WHEAL UNY.—W. Rich, M. Rogers, July 7: The lode in the 172 west yields low quality tinstone, but it looks promising to improve, and the ground is easy for driving. The 160 end west is worth 8l. per fathom. The 160 east carries stones of tin. The 130 west carries a little tin. The 130 end east is worth 7l. per fathom.

WHEAL GRENVILLE.—T. Hodge, July 9: The lode in the 165 east end is looking more promising than for some time past. We shall be entering the tin ground gone down in the level above in another 3 or 4 fms. driving. The lode in the 150 east is worth 9l. per fathom, and likely to further improve. There is no change in the other bargains worthy of note.

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro, July 9: Produce for the month of June, 34,500 oits.=13,368l.; yield, 6 oits. per ton.—Cuiabá: 150 tons stamped in 15 days; yield 2½ oits. per ton.

RICHMOND CONSOLIDATED.—Telegram from the mine at Eureka, Nevada: Week's run, $55,000, from 958 tons of ore. Doré bars from refinery, $43,000.

— R. Rickard, June 19: Since my last the work in the mine has been carried on with usual regularity. The 200 cross cut has been drifted 8 ft. without any particular change in the ground. The 400, on the quartzite, has been advanced 11 ft.; the present end is in broken ground, and requires timbering. The 500 north cross cut has been drifted 16 ft.; the present end is in harder ground, and more favourable for ore. The 600 west drift has been drifted 6 ft.; the end is still in very hard ground. The 600 west drift, from the north cross-cut, has been drifted 22 ft.; the ground is very favourable for drifting. The 900 west drift has been advanced 10 ft., without any change in the ground to mention. The 900 north cross-cut has been drifted 12 ft.; this drift has crossed the shale, and is now in hard limestone. The rise in back of the cave, above the 400, has very much improved, and it now shows 4 ft. of very fair grade ore. No. 11 chamber is not looking so well as it was; the ground is very heavy, and the ore is much mixed with limestone boulders, consequently it is very slow work to extract the ore. The northern part of No. 13 is looking very well, and we have sunk on the ore 30 ft., which is 50 ft. below the bottom of the 500 drift. A rise has been started from the 600 south, on the fissure, to connect with the winze. There is nothing new to report from any other portion of the mine. The furnaces are running very well, and smelting their usual quantity of ore.

BIRDSEYE CREEK.—Telegram from Mr. G. S. Powers: We have cleaned up after a run of 30 days. The gross returns are $8500; the profit is $4000. I send you a remittance of $2500.

EBERHARDT AND AURORA.—F. Drake, June 16: Eberhardt Drift: The total length of Eberhardt drift on May 7 was 978 ft., and the distance run for the week ending May 14 was 38 ft., making a total length of drift to May 14 of 1016 ft. The progress made in the drift (as will be seen) during the past week is small. Both of the contractors and some of the men are very ill and unable to work, consequently at 7 A.M. of the 14th I closed down the works for a few days until the men regain their health so as to resume work. I thought it better to make this temporary suspension than to put inexperienced men upon our drills. During the time the drift is idle I am having some small repairs put upon the machinery. The ground is hard black lime.

PLACERVILLE.—Isaac Thomas, June 16: During the past two weeks ending this date the fourth level has been driven north 26 ft., making a total length of 180 ft; cross-cut from 500 ft. station has been driven 13 ft., making a total length of 58 ft. Extracting ore.

— T. Price, June 18: I mail you to-day the usual fortnightly report of the superintendent, which will explain all to you. The cross-cut in the 500 ft. level has not as yet passed through all the vein; the quartz passed through is not sufficiently auriferous to pay, but nearer the hanging wall the character of the ore may change very materially. The vein is also getting smaller at the north end of the 400 ft. level. The mill is now doing constant duty, and the ore so far is fair in quality, but not so good as we have crushed in the past, as we are now compelled to crush some low grade in opening up the stope. If the quartz in the 500 ft. level should not turn out to be good pay quartz I intend to drift northerly on the 3 ft. seam of quartz referred to in my last letter; by doing this I shall be able to test the quality of this new seam; and it is considerably softer than the ground in the main ledge.

— Telegram.—T. Price, July 8: Have crushed another 240 tons of quartz, yielding $10 per ton.

ISABELLE (Gold and Silver).—Lewis Chalmers, June 16: I enclose foreman's report for week ended Saturday:—"I herein submit my report for the week ending June 14. Total distance from monument to face of tunnel 396 ft. Distance run for the week 28 ft. Our rock has bored faster and is considerably harder than at my last report. Have encountered large seams running at right angles with the tunnel, which has cut off several shots, leaving the bottom of the holes from a depth of 1 ft. to 1½ ft. We are liable to have those cross seams for some little distance, or until we get more ground over us. I am expecting night shift of men in the stage due here on the 16th. Machinery all doing well. Am in hopes in my next to report two shifts in tunnel, and good progress."

SENTEIN.—July 5: The managers report as follows:—There is no change worth noticing at the mine, the stopes and ends being of the same value as when last reported on. We are only working three points in the mine at present, owing to the large accumulations of mineral, which block up the workings, and which we are anxious to send to the Bocard before breaking further large quantities of ore. These points are—Stope in bottom of No. 3, St. Eugenie level, which is worth 8 tons of lead and 4 tons of blende per fathom; here we have broken for the week about 30 tons; driving No. 4 end, St. Eugenie level, which is worth 5 tons of lead and 5 tons of blende per fathom for width of the end—about 5 ft.; and stoping behind the same, where the lode is worth 7 tons of lead and 6 tons of blende per cubic fathom; we have broken here 50 tons. Total ore broken for the week, by 18 miners, 80 tons. We have brought down to the dressing-floors 94 tons of first-class ore this week, against 54 tons last week, and we are daily increasing the number of wagons. A London engineer has been out, and laid down a line for a wire rope from the mine to the valley, which we think is very practicable, and when it is erected we shall be able to bring down a very large quantity of ore, and it will make a great saving in carriage. Good progress is being made in the erection of the water wheel and stone-breaker; the walls are nearly up, and the main beams fixed in position, and by the end of the week the stone-breaker will be in its place. The iron launder to carry the water to this wheel is in course of making.

DON PEDRO.—Capt. Vivian reports, under date June 4, as follows:—Mine: Some good samples have been obtained from No. 8 old shoot in exploring, the level being driven north from the stopes at Bryant's. The lode here has a very promising appearance, and may further improve at any moment, which is anticipated. Should we be successful in opening out paying ground in this part of the property it will be a great advantage, as the whole of the ore is dry, and if mixed with the wet ore from the bottom of the mine (say, in equal parts) will work well together at the reduction department, whereas if the ore from the latter part be treated by itself a great deal of trouble would be experienced in passing through the gratings in connection with the jigging machinery.—60 Ft. Wheel Pitwork: Since my last we have prepared and put down in No. 1 incline sump shaft 193 ft 9 in. of 15 in. pitwork, and drained the water to that depth on line of dip below the adit level. The jack-head lift is fixed in a cistern 152 ft. 9 in. below the top of the above-named incline, and is a great favourite with all hands here, who agree that it is the most suitable pitwork ever introduced at Maquiné, but strange to say, not a single individual in the establishment had ever seen anything of the kind before, nor did anyone know how the castings were to be put together so as to constitute a pumping lift. The drop or sinking lift is now 41 ft. in length, which draws the water to the cistern named. The lift will be extended as we fork the water. I scarcely need state that in doing this very rapid progress has been made. We forked down a certain distance, then cleared debris and repaired damages caused by the water being in so long, at the same time advantage was taken to prosecute repairs to the 60-ft. wheel, which I am pleased to state is working well. What has been done as regards repairs above the hollow shaft, although not yet completed, is quite a success, and I am quite satisfied that it will not give any further trouble. The produce for the month of May amounts to 121 oits, being too small yet to go to the expense of sending word per cable; I hope, however, in about a month's time to be in a position to do so, when increase may be reasonably calculated on.

Mine Captain's letter, dated May 31: The ore has been obtained principally from Bryant's since our last, and continues to rule of low class, the stopes being still close to the old inclines and workings. The general aspects of the lodes or branches continue the same. A level started north of stope has given some good samples, but the branches are small and irregular, but improving as we extend north.—No. 1 Incline Shaft: A large quantity of debris cleared below the point at which the water rose, &c., a jack-head lift fixed, also a drop-lift to supply jack-head, &c., for the purpose of redeeming plunger-pole, which has failed to do duty below water.—No. 2 Incline Shaft: On forking the water a little in No. 1 incline-shaft, &c., the air here became clearer, and a force was placed immediately to repair the damage, &c., caused by water rising, and a large amount of debris cleared, &c.—No. 2 Side Level: Two sets put in at the point where the incline and level join, and all rails, &c., fixed for carrying wire-ropes, &c. In No. 1 side level launders laid from pump-head to adit level. New level still in hand. In the adit level eight legs changed and four sets lathed, the old lathes being rotten. In Alice's level repairs have been made at different points.—The 60-ft. Wheel, an i other Machinery: The wheel continues to work well, but will be further repaired—or, rather, the repairs continued—in the beginning of the month, as additional strain is cast thereon by the new lifts attached thereto to redeem the plunger-pole.—Machinsry: A jack-head lift prepared and fixed in No. 1 incline shaft, and a drop-lift made and fixed below to supply the same to redeem the pole, &c. Both jack-head and drop-lifts work remarkably well, and nothing can surpass the ease, smoothness, and apparent facility with which the jack-head works. A series of launders made and fixed from the mouth of column of jack head to the entrance of No. 1 side level from adit level, to conduct the water emitted by jack-head.

— Capt. Vivian reports under date June 10: Mine and Drainage: Since my last the drop-lift has been extended 33 ft., the bottom of which is now between the 30 and 40 fm. levels. So far good progress has been made in draining, and repairing damages, and clearing debris. We have now considerable repairs to make in the No. 1 incline sump shaft, a great deal of the heavy timber being very badly crushed, therefore we cannot expect to get deeper for the next few days. As regards the state of the timber generally, we have not found it worse than was anticipated. We still take advantage to repair the 60 ft. wheel when necessary to stop it, for carrying on work in the mine, such as repairs to the heavy timber, and when dropping the bottom lift. At Bryants stoping is being carried on without interruption, where the lode is of good size and promising character, but so far the lode continues of low class.

— Mine Captain's Letter, dated June 10: General Remarks: The ore has been derived almost exclusively from Bryant's stopes, and ruled of inferior quality, owing to drivings across old workings for proper ventilation to ascertain extent. The lode in the north-east stopes has improved in appearance within the last few days. The stope opened north from western shaft also presents fair indications of improvement.—Prospective and Running Work: Very fair progress has been made in the repairs and clearance of debris in No. 1 incline shaft, as the water has been forking. The bottom of downright shaft and the incline below are crushed very badly, and require a great many repairs; these are being attended to, and will be temporarily secured before forking any further, as otherwise it may crush altogether, and cause considerable damage. Repairs of the new level are still in hand. In No. 1 side level frame sets have been put in for rolls, to carry wire rope, &c. In the adit level five legs have been changed, and three caps and four sets of side laths renewed. A trap door for ventilation has been fixed in the adit level and another in the new level for forcing the air through No. 1 incline shaft up through Vivian's, back through No. 2 incline shaft, and up through Symons' shaft. Several repairs have been made at different points in Alice's level. Symons' shaft is undergoing repairs.—The 60-ft. Wheel and Other Machinery: The wheel has undergone further repairs, the repairs having been made principally when the wheel was idle for dropping the lift and putting on pumps, &c., and doing other work in the mine which necessitated the wheel being idle to be able to do them.—Machinery: The drop lift has been extended so as to fork below downright and about 2 fms. beyond, at which point considerable repairs have to be made before we can venture (without danger to shaft and incline) to fork below. All the carpenter force is making wood pumps, 16-in. bore, to enable us to reach plunger-pole, &c., to redeem same, &c. The regos are thoroughly clean throughout.

PONTGIBAUD.—July 2: Roure Mine: The engine-shaft has attained the necessary depth for a 200 metre level and trip plat, which is set to cut. The 175 metre-level south produces a little low quality saving work. The same level north is in a regular and well-defined lode, but unproductive. The 150 south continues in disordered ground, and poor. The lode in the same level north is composed chiefly of jointy and unproductive quartz. The 100 metre level, north and south of cross-cut on Virginie's lode, is poor. The rise in the back of the 80 metre level is communicated with the winze from the 60, opening a little ore ground. The winze in the same level, in advance of the 100 south, yields ¼ ton of ore per current metre. The undercutting of the lode in the 80, north of Baugère's winze, yields ½ ton of ore per current metre. The undercutting of the lode in the 60, south of the same winze, yields ¾ ton of ore per current metre. The winze in the 40 metre level south has yielded ¾ ton of ore per current metre, is suspended, and will be holed from the stopes below. The 40 metre level has been communicated from the mill shaft, and will enable us to stop the pumps worked by flat rods at that shaft. The adit level north on the caunter lode opens tribute ground, on which a winze sinking from the shallow level a little ahead yields ½ ton of ore per current metre.—La Brousse: The 140 metre level south is in a strong and well defined lode, composed chiefly of quartz, producing low-quality saving work. The 100 metre level, south of air-shaft, is in a soft unproductive lode. The cross cut east of the 80 end is in disordered ground, which is favourable for progress.—Pranal: The 110 metre level, south of St. George's shaft, yields ¼ ton of ore per current metre. The 90 metre level north is poor. The winze in this level, over the 110 rise, yields ¼ ton of ore per current metre. The 90 metre level south, on the eastern part of the lode, yields ½ ton of ore per current metre. The same level south, on the main part of the lode, yields a little saving work. The winze below this level is in a strong lode, yielding ½ ton of ore per current metre. The 70, north of St. George's shaft, is unproductive. The same level south of cross-cut is poor. The 50 metre level north yields ½ ton of ore per current metre. The same level south yields a little saving work irregularly.—Surface: Our dressing has gone on regularly throughout the month, and the sampling has amounted to 274 tons. There is no change to notice in the lode at Lavergne.

PESTARENA UNITED (Gold).—The following are the returns of gold from these mines for the month of June. From Val Toppa district, 198 ozs. 9 dwts. 12 grs. from 414 tons; yield per ton, 9 dwts. 14 grs. From Pestarena district, 384 ozs. 4 dwts. 20 grs. from 287 tons; yield per ton, 1 oz. 6 dwts. 17½ grs. Total from the two districts 582 ozs. 14 dwts. 8 grs. from 702 tons of ore amalgamated. Average yield per ton, 16 dwts. 14½ grs.

— July 7: District Val Toppa: Zero Level: There is no change in the end south on the caunter branch.—Western Lode: The lode in the end south, in the intermediate level under Zero, is small; worth about 1½ ton of ore per fathom—2 dwt. stuff. In No. 1 level the lode in the end south yields 8 tons to the fm.; worth 5 dwts. per ton. In No. 2 level, in the end south, the lode has fallen off in size; yielding at present 3½ tons of ore per fathom—worth 6 dwts. 16 grs. of gold per ton. In No. 3 level the lode in the end, north of 1st cross-cut, is giving 1 ton per fathom; worth 6 dwts. per ton.—Great Quartz Lode: In No. 5 level the lode in the end south is giving 3½ tons per fathom; worth on an average 10 dwts. per ton.—Flat and New Lodes: In No. 2 level the end, south of 1st cross-cut, is giving 1½ ton to the fathom; worth 1 oz. 10 dwts. of gold per ton of ore. The intermediate under No. 2 level, north of 3rd cross-cut, on the turn of the flat lode, yields 6 tons per fathom; worth on an average 15 dwts. per ton. A selected stone from this stope assayed 25 ozs. 11 dwts. 13 grs. of fine gold per ton, and 9 ozs. 10 dwts. 10½ grs. of silver, making the total of 35 ozs. 1 dwt. 23½ grs. of argentiferous gold per ton. The end south in No. 3 level on the great quartz lode was resumed on the 1st inst., and in this level the end, south of the 1st cross cut west, on the western lode, was resumed.—District Pestarena: Peschiera: No. 5 Lode: The lode in the end north, north of old cross cut, is yielding 4 tons of ore per fathom; worth 1 oz. 6 dwts. of gold per ton.—No. 1 Lode: In the end, north of the 33, the lode is yielding at present 1½ ton of ore to the fathom; worth by small mill trial 1 oz. 19 dwts. of gold per ton. In the 55 fm. level the lode in the end north under Acquavite is giving 3½ tons per fathom; worth 2 ozs. 2 dwts. per ton. The lode in the drive, south of No. 3 stope over this level, yields 5 tons of ore to the fathom; worth 8 dwts. per ton. In the 80 the lode in the end north is small. In the 90 the lode in the drive, in the south end of No. 3 stope over this level, yields 4 tons to the fathom; worth 1 oz. 9 dwts. per ton. In the 100 the lode in the end driving south yields 3 tons of ore per fathom; worth 1 oz. 16 dwts. per ton. The lode in the 100 end north is small at present. The incline shaft under the 110 is suspended for the present, and we are now sollering over the shaft at this level preparing for driving, which will be commenced in a few days. The lode in the end, south of cross-cut, west at the 65, is yielding 1¼ ton to the fathom; worth 1 oz. of gold per ton.—Acquavite Mine: We have suspended driving the end of the old 55 north. In the 46 old level we are now laying a tramroad, and preparing to drive the end of this level north, where we have good prospects of coming to the line of ore worked on above. In the 33, driving westward on the flat branch is suspended, and resumed northwards on the supposed No. 1 lode. During the past week we have put in place the new cast iron drum to break the angle of pump-rods above the 33 in Peschiera Mine, and it is working well.

THE MASSIVE MACHINERY OF THE COMSTOCK.—The new hoisting machinery for the Yellow Jacket shaft, now being constructed in San Francisco, will be surpassed by nothing of the kind on the Comstock. It will be a double cylinder, direct-acting hoist. Each engine will have a stroke of 8 ft., cylinders 28 in. in diameter, and will be of a non-condensing character. They are to work at a steam pressure of 120 lbs. to the square inch, and at 50 revolutions per minute will have a piston speed of 800 ft. While hoisting from a depth of 4000 ft. each, will exert 1500-horse power. A flat steel rope, 7 in. wide, ¾ in. thick, and 4000 ft. long, will be used in hoisting. The Union shaft is now supplied with hoisting works, and will soon be furnished with pumping machinery superior to any now in use on the Comstock. The new pumping engine will be of the compound condensing style, the initial cylinder being 64 in. in diameter, with a stroke of 7 ft. The expansion cylinder is 100 in. in diameter and 8 ft. stroke. It will have 8 strokes a minute and 136 ft. of piston speed in the same time, and will exert about 1800 horse power. It will operate a double line of 14 in. pumps, having a stroke of 10 ft.—*The Virginia Enterprise.*

MOUNTAIN RAILWAYS.—Some railway memoranda lately published in Germany give the highest points yet reached by existing railways passing over mountain ranges or through mountain passes. The Appenine line reaches a height of 2024 ft.; the Black Forest line, 2789 ft.; the Semmering, 2920 ft.; the Caucasian line, 3198 ft; the St. Gothard (tunnel), 3786 ft.; the Brenner, 4475 ft.; Mont Cenis (tunnel), 4390 ft.; the North Pacific, 5420 ft.; the Central Pacific, 7021.; the Union Pacific, 8573 ft.; while a railway over the Andes climbs to 15,646 ft.

NITRATE OF SODA.—The sales of nitrate of soda at Liverpool during June amounted to 2900 tons. The arrivals were 63,700 bags, and the

stocks on the 30th ult. amounted to 104,000 bags, against 115,000 bags same time last year.

*** With this week's Journal a SUPPLEMENTAL SHEET is given which contains: Original Correspondence—Rapid Development of Mines—Beaumont Drill (F. Beaumont); New South Wales—Mining Synopsis for 1878 (R. D. Adams); Slate Quarries in Germany (D. C. Davies); the Mountainous Districts of Asturias and Leon (J. A. Jones); Ornamenting Glass with Metals; Malleable Bronzes; Safe Lighting of Mines (W. E. Teale); Cornish Mine Managers—Dialling; Sheffield Pig-Iron; Idle Mining Ground; Free Importation—Metals and Ores (A. Chaplin); Lords' Dues or Royalties, Land Damage, &c.; The Llanrwst Mining District; Fenstruthal Consols; South Polgooth Mine; Prospects of Mining—the Bwich United; The Wealth of the World—Agriculture, Manufacture, and Mining (R. Tredinnick); Wheal Crebor (T. E. W. Thomas). Sales of Copper Ores; Utilisation of Exhaust Steam. Meetings of Public Companies—Almada and Tirito, Rookhope, Colorado United. Foreign Mining and Metallurgy; Rotary Steam-engines; Improved Steam Pumps. The Scotch Mining Share Market—Weekly Report. Embellishing Metallic Plates; Manufacture of Tin Plates; Commercial Organic Analysis; Tin Mining in Larut; Cassell's Publications; Gas and Water Companies Directory; Railway Literature; The Wild Duck, or Sportsman's Arms.

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The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, JULY 11, 1879.

	£ s. d.	£ s. d.
IRON.		
Pig, GMB, f.o.b., Clyde	2 0 3½	—
,, Scotch, all No. 1	2 2 0- 3 5 0	
Bars, Welsh, f.o.b. Wales	4 12 6-	—
,, ,, in London	5 2 6-	—
,, Stafford., ,,	5 0- 7 0 0	
,, in Tyne or Tees	5 5 0- 5 10 0	
,, Swedish, London	8 0 0-	—
Rails, Welsh, at works	4 10 0-	—
Sheets, Staff., in London	7 5 0- 7 15 0	
Plates, ship., in London	5 12 6-	—
Hoops, Staff.	6 0 0- 7 2 6	
Nail rods, Staff. in Lon.	5 15 0- 6 5 0	
STEEL.		
English, spring	13 0 0-19 0 0	
,, cast	30 0 0-40 0 0	
Swedish, keg	13 0 0-	—
,, fag. ham.	15 0 0-	—
LEAD.		
English, pig, common	13 7 6-	—
,, ,, L.B.	13 15 0-	—
,, ,, W.B.	14 0 0-	(nom.)
,, sheet and bar	14 5 0-	—
,, pipe	15 0 0-	—
,, red	15 15 0-	—
,, white	25 0 0-	—
,, patent shot	18 0 0-	—
Spanish	13 2 6 13 5 0	
NICKEL.		
Metal, per cwt	18 0 0-20 0 0	
Ore, 10 per cent. per ton	24 0 0-26 0 0	
QUICKSILVER.		
Flasks of 75 lbs., ware.	6 0 0-	—
SPELTER.		
Silesian	14 0 0-	—
English, Swansea	16 0 0-	—
Sheet zinc	18 10 0- 19 0 0	

	£ s. d.	£ s. d.
TIN.		
English, ingot, f.o.b.	64 0 0-	—
,, bars ,,	65 0 0- 65 10 0	
,, refined	66 0 0-	—
Australian	64 15 0-	—
Banca (nom.)	67 0 0-	—
Straits	64 15 0-	—
COPPER.		
Tough cake and ingot	59 16 0-	—
Best selected	60 10 0-	—
Sheets and sheathing	64 10 0-	—
Flat Bottoms	67 10 0-	—
Wallaroo	61 0 0- 61 10 0	
Burra, or P.C.C.	61 10 0-	—
Other brands	60 0 0-	—
Chili bars, g.o.b.	54 7 6-	—
PHOSPHOR BRONZE.		
Bearing metal	£105 0 0	
Other alloys	£110 0 0- 125 0 0	
BRASS.		
Wire	7 d.- 7½d.	
Tubes	7¼ - 7½	
Sheets	8 - 8¼	
Yel. met. sheath. & sheets	5¾ - 5¼	
Nails composition	7¾ - —	
TIN-PLATES.*	per box.	
Charcoal, 1st quality	1 1 6- 1 2 0	
,, 2nd quality	1 0 0- 1 1 0	
Coke, 1st quality	0 16 6- 0 18 0	
,, 2nd quality	0 14 6- 0 15 0	
Black per ton	16 0 0- 16 10 0	
Canada, Staff. or Gla., at Liverpool	11 0 0- 12 0 0	
Black Taggers, 450 of 14 × 10	30 0 0-	—

* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; IX 6s. per box more than IC quoted above, and add 6s. for each X. Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS.—The business transacted in all metals continues of a most limited character, operators for the most part showing no disposition whatever to enter into any fresh enterprise, and a dull tone consequently prevails throughout the markets; nevertheless, prices have undergone but slight fluctuations. The tendency, however, for the most part is still downwards. Purchases generally are contracted and kept within the requirements of the day, and this, combined with the inactivity of speculators, casts a gloom over the whole trade. The inducements offered to speculators to recommence operations are not considered by them sufficient to render purchases remunerative, and therefore they prefer to look on rather than incur the risk of being saddled with stock which could only be turned over by submitting to a loss. However, when the market resumes its ordinary character, or takes an upward turn by reason of more favourable statistics, or from any other fortunate circumstance, buyers will undoubtedly soon again come forward, and display their former eagerness in effecting contracts. There are several reasons for believing that prices cannot make any substantial advance yet awhile, amongst others the keen competition existing for the present limited trade, the excessive over supply, the want of confidence, and the uncertainty of future events. On the other hand there are many reasons which lead to the belief that the time cannot be far distant for a general revival in commerce, such as the cheapness of money, the low prices, and the probability of some diminution in production and manufactures. Therefore, as the reasons for and against seem to slightly preponderate in favour of better trade, there is no occasion to despair, or to expect that the present depression will extend much beyond its existing limits, but, on the contrary, as time progresses a gradual improvement will ensue.

It would appear almost impossible for metals to depreciate in value to a much greater extent, providing supplies are moderate, for never before, or with few exceptions, have quotations been known to be quoted so low. Consequently the risk in effecting contracts at the present reduced rates is extremely small. There is now scarcely any apprehension of a panic ensuing, and the depression has been considerably lengthened by the reluctance and indisposition displayed by the commercial community at large to buy beyond their immediate wants. The more settled appearance of politics, the improved position of financial matters, and the curtailment of credit to doubtful firms, ought to spread a good influence, and will certainly help to promote the restoration of trade. With judicious management the markets ought to derive considerable benefit from the next autumn demand, providing the productive power is curtailed, and brought down below the consumptive power, for until the demand again overtakes supply higher prices will not be realised. The markets must be lightened in order to enable sellers to obtain a higher value for their several commodities.

COPPER.—A gloomy tone has prevailed over this market throughout the week, which has been caused by two announcement, one being the Wallaroo sale for Tuesday next, when 1146 tons of copper will be offered for sale, and the other being the heavy charters which have been telegraphed over from Valparaiso for the month of June, there being 5200 tons since the 2nd ult. to the 28th. Fortunately there will be no Burra sale after the Wallaroo next Tuesday, owing to the very small stock in first hands of this favourite brand. Should the whole of the Wallaroo be disposed of, the importer engages not to sell by private contract or otherwise until Oct. 14 next. The sale will consist wholly of cakes, and will be offered in 10-ton lots, but, judging from the present tone of the market, anything but a favourable price can be expected. Nevertheless, there may be some few buyers who may venture upon giving something near present prices; but it is more generally thought that offers will not be obtainable for any large portion at much over 60*l.* per ton. At the same time there is always great uncertainty attending public sales, and it is difficult to form any reliable opinion as to the result of the sale, and buyers should not limit their orders too close. The last sale was interrupted by the receipt of a telegram fixing the minimum above the price which the majority of buyers were inclined to give, and consequently the whole quantity then offered was not disposed of, but it is to be hoped that the auctioneer will not again be interfered with, as such proceedings are calculated to unsettle buyers, and to deter them from bidding up in the early part of the sales.

Now, to ensure the success of a sale it is generally considered essential to start well, as it is not unfrequently the case that certain buyers wait to see what others will do. It is, therefore, very necessary to inspire confidence, and let it be thoroughly understood beforehand that the sale is without reserve. The company is always a great deal more likely to realise a higher price by leaving the sale to the competition of the room and the wise discretion of the auctioneer than by fixing a minimum of their own. While Chili imports continue large they must necessarily have the effect of depressing the market. Although a great part of the copper may not be available, yet there is the fact of its existence, and as long as stocks continue to be added to prices will decline. There is already too much copper, and supplies ought certainly to be cut down very considerably for some time to come, but if importers will not listen to reason, and will persist in continuing to forward superabundant quantities, they must be prepared for lower prices, as it is impossible to dispose of it without offering some further inducement to buyers to purchase. The market is flat, with a declining tendency, and manufactured is slow of sale. At the public Ticketing, held at Swansea last Tuesday, 1352 tons of ore were sold, at an average of 10s. 8¼d. per unit.

IRON.—This trade still remains in a most unsatisfactory condition, and the Board of Trade Returns published this week for the first half of the present year are very discouraging, as they show a decrease during that period of over 1,000,000*l.* sterling to have taken place in the value of the shipments of iron and steel. This enormous decrease respecting the value must not be considered as referring to quantity—that is to say, the price of iron now being about 1*l.* per ton below what it was at the commencement of 1878, shows that it is not represented by reduced make, but more particularly to the decline which has occurred in prices. The iron trade would appear to be dying out from the following extract in one of the daily papers during the present week, which states that "King Iron is dying out, and King Steel is preparing to reign. King Steel has invaded the shipbuilders' yards, the boiler-makers are making a treaty with him, and now he is conquering the bridge builders. The great bridge over the Forth is to be built of steel, and a large bridge for a railway in Australia has just been made in Scotland entirely from steel. The sooner ironmasters recognise the new order of things the better for themselves." This is a further proof of the soundness and correctness of the views we have from time to time expressed, and it is a pity that masters have not ere this taken more notice of the warnings that have been laid before them, for had they been more prudent they might have saved a great portion of the losses they have sustained. It is reported from Leeds that there is not the least perceptible improvement in the trade in this district, and although occasionally a few orders are offering, makers have to quote such low prices to secure them that there is little or no profit whatever attending transactions. Makers appear to be coming quite disgusted with the trade, for a positive loss is generally the result of the execution of each order, and although at times they display eagerness to effect contracts, it is more for the slight satisfaction of keeping their mills going than from the expectation of any profitable returns being made out of the order.

It is reported from Blackburn that the various foundries have given notice of a reduction of 20 and 30 per cent. in the wages of skilled workmen. This announcement, as was doubtless expected, has met with marked disapproval on the part of the men, and at one of the works where the reduction was the heaviest they are reported to have immediately left the works in a body as soon as the intention of their employers was made known. There was but a thin attendance at the last Quarterly Meeting at Middlesborough, and a very dull tone was observable. Quotations for the most part show little or no alteration, though the business transacted remains of a limited character. Makers are asking for No. 3, 32s. 9d. to 33s., and for No. 4 forge, 31s. 9d. to 32s., and merchants are a shade under these figures. No. 1 is procurable at about 31s. 6d. per ton. Shipments have not been maintained, the quantity exported from Middlesborough last week being 13,000 tons, and those for the month of June are reported at about 60,000 tons.

A diminution is said to have taken place in the total stock in public stores in the Cleveland district of 5587 tons, thereby making the stock on the 30th ult. 295,491 tons: 81 furnaces are reported to be lying idle and 84 in blast. The manufactured trade keeps very slack, and at present there are no indications by which any improvement can be anticipated for some little time to come. Prices remain nominal, plates being quoted from 4*l.* 17s. 6d. to 5*l.*, and common bars at 4*l.* 15s. to 4*l.* 17s. 6d. per ton. The trade at Sheffield remains in an almost stagnant condition, and sellers are slightly weaker in their quotations, though the official rates are unaltered. The exports keep limited, with the exception of one or two favourite brands. The home consumption is also small, the demand being chiefly for sheets and plates. Many hands are still out of employment, and, consequently, the distress continues very great, and the summer has as yet brought no relief to it. The Birmingham trade is reported dull, and orders for all descriptions show a marked scarcity. There is little or no change to be reported from the Welsh districts, and prices show no improvement, and it is reported that makers have had to refuse several indents on account of the low limits that accompany them. Sellers of steel are receiving many more orders than those of iron, the output of one firm alone last week being 1600 tons, which if kept up would make an average of over 80,000 tons per year. A little activity is occasionally shown in the bar department, but orders have to be effected at extremely low rates.

There is no change in the demand or price for pigs, and clearances have remained very small. From other districts there is nothing fresh to report, but the returns from all parts of the country are unanimous in showing the great depression that is still prevailing throughout the trade. At the opening of the Glasgow warrant market, last Monday, sellers displayed a good deal of eagerness to effect sales, and consequently prices were reduced to 40s. 4½d. for cash parcels, and a drooping tendency has been observed all through the week, 40s. 2d. having been accepted, and to-day's price is quoted at 40s. 3½d. per ton.

SHIPMENTS.

For the week ending July 5, 1879 ..... Tons	8,253
For the week ending July 6, 1878	7,416
Increase	836
Total increase for 1879	53,814
Imports of Middlesborough pig-iron into Grangemouth:—	
For the week ending July 6, 1878 ..... Tons	5,567
For the week ending July 5, 1879	4,580
Decrease	987
Total decrease for 1879	33,388

FURNACES.

In blast July 5, 1879	90
In blast July 6, 1878	95

TIN.—At the early part of the week the market remained very dull, and prices for foreign were reported down to 63*l.* 15s. per ton, but there seems to have been scarcely any business carried through at this price, for at the same time there were buyers at 64*l.*, who were unable to meet their requirements, and subsequently sellers have displayed a good deal more firmness in their quotations, and transactions have been effected chiefly at about 64*l.* 10s. to 64*l.* 15s. per ton. The market just now shows an upward tendency, and sellers are evidently reluctant to make contracts at existing rates. There appears to be no particular reason for the slightly improved tone, and it can only be accounted for by a few of the chief operators having shown more inclination to make purchases. The deliveries are fairly maintained, but supplies continue to come forward in such overwhelming quantities that the heavy stocks now existing have but a poor chance of diminishing. A public sale is announced to take place at Amsterdam on the 30th inst., when 23,300 slabs of Banca will be offered. The market for English remains unaltered.

QUICKSILVER is flat at 6*l.*, and a further fall in price appears inevitable, for at the present time California is underselling, and few orders come to London.

LEAD.—A very limited business only is doing in this metal, and prices make no alteration. Supplies, however, still come forward freely, and much in excess of the demand, and should they so continue, unless a revival in the trade speedily sets in, sellers will have to accept lower prices.

SPELTER.—The market is dull, at former rates.

STEEL.—Quotations are unaltered, and the demand remains very inactive.

TIN-PLATES.—Transactions are limited, and some sellers have slightly reduced their prices. Prime cokes of first hands have been sold to-day at 14s. 6d., free on board, London.

THE COPPER TRADE.

Our prices for copper have been very steady until the last few days, when bars have been rather more offered. Anything like a demand from India or Russia—and both markets may be expected to show signs of activity if fair harvests can be counted upon—should cause an advance.

EXPORTS—First 6 months.	1877.	1878.	1879.
English copper, wrought & unwrght. Tons	10,226	16,391	15,169
Foreign copper—unwrought	7,449	6,102	7,334
Yellow metal	8,478	7,513	8,712
Total	26,753	30,006	31,215
IMPORTS—First 6 months.			
Copper in ores	5,182	5,837	6,343
Do., regulus and precipitate	9,871	9,704	14,483
Bars, cakes, and ingots	20,964	18,709	22,965
In pyrites, estimated	9,129	7,370	6,132
Total	45,146	41,620	49,923
Total stocks in Europe and afloat, July 1	41,200	46,000	54,800

King William-street, E.C., July 8. RICKARDS AND BUDD.

THE TIN TRADE.

	May 31, 1879.	June 30, 1879.	June 30, 1878.	June 30, 1877.
Straits and Australian, spot...Tons	10,188	9,913	9,256	8,638
Ditto, landing	470	540	219	358
Straits afloat	370	405	10	434
Australian, afloat	1,139	1,196	2,716	3,308
Banca, on warrants	2,079	1,554	1,156	966
Billiton, spot	1,905	1,985	1,593	1,418
Ditto, afloat	1,130	1,380	1,400	930
Australian tin in Holland	200	208	426	700
Total ..... Tons	17,431	17,211	16,776	16,752
Deliveries during the month in				
London	1,104	1,052	852	968
Ditto, Holland	777	822	504	670
Total ..... Tons	1,881	1,874	1,356	1,638
Shipments during the month from				
Straits ..... Tons	210	260	10	140
Ditto, Australia	338	600	970	950
	During first 6 months.	During first 6 months.	During first 6 months.	
Shipments from Straits to London ...Tons	2,395	1,785	2,310	
Shipments from Australia to London	3,506	4,776	5,168	
Deliveries of tin in London	6,489	6,061	5,058	
Deliveries of tin in London and Holland	10,454	9,195	8,555	

Banca in Trading Company's hands and afloat, 1690 tons.

London, June 30. A. STRAUSS AND CO.

Tin has receded in value, and appears likely to fall still further unless present holders come to the rescue. The delivery of foreign out of warehouse, London and Holland, is—Jan. 1 to June 30, 10,314 tons, against 9195 tons in 1878, and 8586 tons in 1877. The stock of tin here and in Holland, omitting Banca in Dutch Trading Company's hands, is—June 30, 14,430 tons, against 12,650 tons June 30, 1878, and 12,080 tons June 30, 1877.

	1879.	1878.	1877.
Shipments of Straits to England, Jan. 1 to June 30 ..... Tons	2395	1800	
Australian, ditto	3500	4750	
Total	5895	6550	

The quantity of tin exported from the United Kingdom—Jan. 1 to June 30—as shown by Board of Trade Returns, was—

	1879.	1878.	1877.
English ..... Tons	2611	3018	3079
Foreign	3795	3419	1531
Total.	6406	6437	4610

July 8. RICKARDS AND BUDD.

MESSRS. PIXLEY and ABELL.—GOLD: An order for Spain for about 120,000*l.* was filled by the supplies on the market; there has been no demand for bars for other quarters, and the Bank has received about 128,000*l.* since our last; further amounts may, perhaps, be sent in, as a considerable portion of the total from the East is at present held over. The Deccan has brought 524,760*l.* from Australia, India, and China; and 2,500*l.* of this has been returned to Japan by the steamer leaving to-day: 100,000*l.*, in sovereigns, have been withdrawn from the Bank for Lisbon and the Cape. The following statement of the imports and exports during the first half of the past five years may be of interest:—Imports: In 1875, 12,957,716*l.*; in 1876, 10,134,361*l.*; in 1877, 7,086,193*l.*; in 1878, 7,331,640*l.*; in 1879, 8,795,970*l.*—Exports: In 1875, 7,661,456*l.*; in 1876, 4,079,191*l.* in 1877, 10,835,475*l.*; in 1878, 9,127,444*l.*; in 1879, 4,523,331*l.* The imports of gold from Australia and the United States for the same periods are also given:—Australia: In 1875, 3,134,210*l.*; in 1876, 2,093,800*l.*; in 1877, 2,927,83 *l.*; in 1878, 2,630,000*l.*; in 1879, 2,028,000*l.*—United States: In 1875, 6,197,000*l.*; in 1876, 2,642,038*l.*; in 1877, 1,579,196*l.*; in 1878, 742,980*l.*; in 1879, 347,500*l.*—SILVER: There has been but little business the past week; prices have declined, and the market has been weak. The supplies have been very small, and owing to this fact the rate has not declined below 51¾d., at which all parcels offering have been taken for the Continent; there is no Indian demand, and the steamer of to-day takes no bars for the East. The Gellert has brought 10,000*l.* from New York. During the past six months the price of silver has varied very much; the highest rate, 53d., was in the middle of June; the lowest, 48⅞d., at the end of March. The exports to the East exhibit a marked decline, for whereas in 1878 they were 4,354,119*l.*, this year they are but 3,186,194*l.* The imports and exports of silver during the first half of the past five years have been:—Imports: In 1875, 4,957,824*l.*; in 1876, 5,127,732*l.*; in 1877, 10,396,262*l.*; in 1878, 7,362,243*l.*; in 1879, 6,190,882*l.*—Exports: In 1875, 4,253,580*l.*; in 1876, 4,951,923*l.*; in 1877, 9,099,593*l.*; in 1878, 6,884,368*l.*; in 1879, 5,955,587*l.* The total shipments from San Francisco to China from Jan. 1 to June 30 are $3,7-3,439.

The MINING SHARE MARKET has been particularly quiet this week, and in most instances quotations, which are chiefly nominal, are lower.

TIN shows no improvement in price, and tin mines are even exceptionally lower, and were freely offered. Wheal Peevor, notwithstanding the dividend and the good prospects, have declined to 8½, 9 South Frances have had a heavy fall, and leave off 6¾ to 7¼. We can hear of no change in the mine, nor any reason for this decline, except that whenever a share in this or any other mine is offered in a lifeless market the price is at once put down. Carn Brea, 23 to 25; Cook's Kitchen, 1½ to 1¾; Dolcoath, 23 to 25; East Lovell, 30s. to 35s.; East Pool, 9 to 9½; South Condurrow, 11½ to 12; Tincroft, 7½ to 8¼; West Basset, 3¼ to 4; Wheal Agar, 2½ to 3; West Peevor, 2¾ to 3¼. Wheal Grenville, 3½ to 4; Capt. Hodge reports that the 15 end has improved, and worth 15*l.* per fathom. The tin sold on the 9th—18 tons odd—realised 648*l.* 12s. 6d. West Frances, 4 to 4½; we hear a good lode has been cut in the bottom end, east of Smith's shaft; driving towards the great flat lode continues.

COPPER remains about the same, and, with the exception of Wheal Crebor, scarcely any business is doing in shares. Devon Great Consols, 1⅞ to 2. Wheal Crebor, 2⅜ to 2⅝; the mine continues to look well, and will sample 150 tons of ore for the two months. West Tolgus, 18 to 20; at the meeting, held in Cornwall, the accounts showed a loss on two months' working of 580*l.* 2s., and a balance in favour of the company of 1015*l.* The ore sold realised 2007*l.* 12s. The credits to come into next meeting will amount to 2055*l.*, and this, it is expected, will meet the current costs. At North Treskerby meeting the accounts showed a loss of 1202*l.* on four months' working, and a balance at bankers of 765*l.* The report of the mine is very favourable, and a project appears feasible for raising money by the sale of forfeited and relinquished shares. East Caradon, 4s. to 6s.; Marke Valley, 10s. to 12s. 6d.; Mellanear, 3⅛ to 3⅜; Parys Corporation, 10s. to 12s. 6d.; Morfa Du, 16s. to 18s.; Penstruthal, 2s. to 3s.

LEAD MINES partake of the general dulness, and it is almost impossible to find buyers when shares are offered, and this refers not alone to speculations but to dividend properties. Van are quoted 15 to 16; no change reported at the mine. Great Laxey, 15 to 16. Roman Gravels, 7½ to 8; this mine sold on Saturday 200 tons of lead ore at 8*l.* 5s. per ton. Herodsfoot, 2½ to 3; the lode in the 205 south is worth 15 cwts. of silver-lead ore per fathom, and the mines generally looking well. Tankerville, 2½ to 3; Pateley Bridge, 12s. 6d. to 15s.; Rake vein in the 30 looks promising for improvement. The sump winze sinking under this level is still worth 10 tons of lead ore per fathom. West Pateley, 2 to 2½; Great Dyliffe, 1 to 1½; a sale of lead, 45 tons, takes place this week. Aberllyn, 10 to 11; Bettws-y-Coed, ⅞ to 1; Denbighshire, 1½ to 1⅝; East Van, ⅞ to 1½; Glenroy, ⅞ to ⅝; Gorsedd and Merllyn, 2 to 2¼; Leadhills, 1½ to 2; Pandora, ½ to ⅝; Rookhope, ½ to ¾; West Chiverton, 2 to 2½; West Holway, 1⅜ to 1⅝; Caron, 2 to 2⅛; Frongoch, 1¾ to 2; Grogwinion, 2½ to 3; Hartington, 1½ to 2; Crosswood, 1 to 1½; Mawston, 1½ to 2; Red Rock, 1¾ to 2¼; St. Harmon, 1 to 2; South Cwmystwith, 1 to 2; West Wye Valley, 1¼ to 1⅜; Wye Valley, 1¼ to 1⅜; Gwernymynydd, 4 to 4¼.

FOREIGN MINES.—Blue Tent, 2 to 2⅛; Birdseye Creek, ½ to ⅝; a telegram during the week gives June clean up at $8500; profit, $4000; remittances, $1500. Arendal, 3 to 3½; the accounts prepared for the meeting show a paid-up capital of 42,124*l.* 10s., in 12,000 shares, being 10s. per share to be called up on 11,000. The outlay to April 30 has been 36,000*l.* 4s. 3d., including purchase of mine, 26,608*l.* 12s. 6d.: railway, 3152*l.* 4s.; smelting works, 557*l.* 4s. 10d.; houses, 932*l.* 1s. 11d.; plant and machinery, 4282*l.* 4s. 1d. Credit is taken for ore in hand, 600 tons, at 4*l.* per ton, 2400*l.*; balance at Norway, 388*l.* 2s. 9d.; cash at bankers, 764*l.* 12s. 1d. The profit and loss account from February, 1878, to April 30, 1879, shows an expenditure of 5076*l.* 14s. 7d., including salaries, 674*l.* 4s. 10d.; directors, 468*l.* 15s.; secretary, &c., 163*l.* 12s. 9d.; travelling expenses, 380*l.* 15s. 8d. On the credit side there is an estimate of 600 tons of copper ore, at 4*l.* per ton (2400*l.*); and a balance carried to general balance-sheet of 2644*l.* 14s. 3d. Placerville, 2¼ to 2⅜; a further parcel of low grade ore has been crushed (240 tons), and has yielded at the rate of $10 per ton. The company have purchased a large and complete quartz mill, and as soon as it is put up will begin steady returns. Cape Copper, 27 to 28; Canada Gold, 2 to 2⅛; Colorado, 1⅛ to 1⅜; Don Pedro North del Rey, 16s. to 18s.; Eberhardt and Aurora, 2⅜ to 2⅝; Flagstaff, ⅛ to ¼; Frontino and Bolivia, 2 to 2⅛; Hultafall, 1½ to 2; New Zealand Kapanga, ⅛ to ⅜; New Quebrada, 2 to 2¼; Panulcillo, 17s. 6d. to 22s. 6d.; Richmond, 8 to 8¼; St. John del Rey, 255 to 265; Santa Barbara, 35s. to 40s.; Ruby, 2 to 2¼.

The Market for Mine Shares on the Stock Exchange, although still far from active, has shown somewhat more animation than at the close of last week. It is very generally felt the long period of depression which has been passed through has had at least one beneficial effect—it has caused those connected with the management of mines to pay the greatest possible attention to economy, and that even the reduction which has been made in the wages of the men represents a far less important diminution on the expenditure side of the account than the saving which has been effected in removing unnecessary petty officers and others, who would never have been appointed except during times of great prosperity. The evils of the system which has now been altered are too plainly seen to permit of its revival, and the consequence is that there is a general conviction that a very small improvement in the price of metals will result in highly satisfactory profits to adventurers. Shareholders, moreover, have now an amount of protection against directors which until recently was seldom given them, so that it may be anticipated that henceforth none will discover when too late that heavy liabilities exist, whilst the accounts make the concern appear prosperous. It has been a too common custom with many (it might almost be said most) mining companies, and is still so with a few, to credit calls made and ores sampled as receipts, and to charge all debts incurred as payments. But as frequently, if not usually, part only of the calls are realised, and as it is not uncommon for the estimate of ore sampled to prove far in excess of the quantity which the smelter actually receives and pays for, whilst, on the other hand, the labour cost is generally paid, and the merchants' bills are often carried to a suspense account to be liquidated as convenience offers, it follows that when the accounts are really and systematically balanced a concern is discovered by the public to be deeply in debt instead of in possession of a good balance. In most cases this discrepancy appears on the face of it to indicate that the managing director has put the difference in his pocket, whereas the fact is that the shareholders themselves have had the benefit (if there were any in trading upon credit instead of for ready money) in getting their mine worked without paying the necessary calls. As a penalty for following this system of trading Mr. J. B. Balcombe has found it necessary to perform 18 months hard labour in Cardigan Jail by direction of the Recorder of London; although there appears to be no reasonable doubt that he was convicted of appropriating upon a certain day twice the amount of money which the company on that day or at any time within many months therefrom possessed, the poverty of the company being the reason that claims against it were unpaid, and it even appears that moneys are now properly due to Mr. Balcombe from the company. Mr. Balcombe's case is a hard one, no doubt, but the conviction cannot fail to be advantageous to investors, as it will secure them against inaccuracies which have even been sanctioned by custom, but which hide the true financial position of the concern. The Cornish Correspondent's report in another column of a decision of the Vice-Warden is also worthy of consideration by both directors and shareholders.

Devon Great Consols, 1½ to 1⅝; flatter, owing no doubt to the fall in the price of copper and the large importation announced this

week from Chili. It is gratifying to learn, however, from the district that the workpeople are acting on the advice so long given them in the Journal—to give up all holidays, and work vigorously for the benefit of themselves and families as well as for the company's interests. It appears, too, from our local correspondent that the newly-appointed purser (Mr. M. Bawden) is doing all he can for the benefit of the company, and his serious attention may be called to practising economy in surface management, and arrangements in the various departments, on which subject for years numerous correspondents, locally and otherwise, have directed attention.

Tharsis, 22¼ to 23½; concerning the litigation which has been going on in Paris, and in which the shareholders in this company are at least indirectly interested, the Moniteur de l'Epargne says:—"The shareholders of the old Huelva Copper Mines Company (Société des Mines de cuivre de Huelva) recollect the tussles that they have had for more than 20 years with certain of its founders, and from which they have always come out triumphant. Quite recently again, on the occasion of the fusion of the Huelva Company with the Tharsis Company, these same persons and their representatives have tried to make a great noise with four new suits which they had commenced against the Huelva Company. One of these suits was for the cancellation of the contract for the [original] transfer of the mines, upon the pretext that the company had not fulfilled its engagements towards the transferrors. But by judgment of June 24, 1879, the Civil Tribunal of the Seine has just rejected the four demands, and condemned the authors of them to all the expenses. Thus there has once more been confirmed the numerous decisions which the tribunals and the Court of Appeal have already given in favour of the Huelva Company."

St. John del Rey, 255 to 265; the latest telegram from the mines at Morro Velho, dated Rio de Janeiro, July 9, states that the produce for June was 34,500 oits., of the value of 13,368*l.*, the ley of the ore being 6 oits. per ton. At Cuiaba 150 tons, stamped in 15 days, yielded 2½ oits. per ton. Don Pedro North del Rey, ¾ to ⅞; the manager (June 4) writes that some good samples have been obtained from No. 8 old shoot in exploring, the level being driven north from the stopes at Bryant's. The lode here has a very promising appearance, and may further improve at any moment, which is anticipated. Should they be successful in opening out paying ground in this part of the property it will be a great advantage, as the whole of the ore is dry, and if mixed with the wet ore from the bottom of the mine (say, in equal parts) will work well together at the reductiou department, whereas if the ore from the latter part be treated by itself a great deal of trouble would be experienced in passing through the gratings in connection with the jigging machinery.

Richmond, 8½ to 9; the usual telegram from the mine at Eureka, Nevada, states that the week's run was $55,000, from 958 tons of ore. During the week the refinery produced doré bars to the value of $43,000. The report from the manager (June 19) states that since the previous week the mine had been carried on with the usual regularity. The 400, on quartzite, is in broken ground, requiring timbering. The 500 north cross-cut is is more favourable for ore. The rise in the back of the cave above the 400 has very much improved, and now shows 4 ft. of very fair grade ore. The No. 11 chamber is not looking so well as it was; the ground is heavy, and the ore much mixed with limestone boulders. The northern part of No. 12 is looking very well. They have sunk on the ore 30 ft., which is 50 ft. below the bottom of the 500 drift. A rise has been started from the 6 0 south, on fissure, to connect with the winze. The furnaces are running well, and smelting the usual quantity of ore.

Flagstaff, ⅛ to ¼; it is stated that the Supreme Court of Utah gave judgment in the case of Davis against the company on June 23, the result being the total defeat of Mr. Davis. The case was an appeal from the Court below, which had decided in favour of Mr. Davis's claim for about 60,000*l.*, and had ordered the appointment of a receiver, who was to apply the proceeds to the payment of Mr. Davis's claim. The Supreme Court has reversed this decision; and appears to be strongly of opinion that Mr. Davis's claim was fraudulent. The full judgment may be expected by the next mail. It appears that the title to the company's property passed under deeds made by judgment creditors, and the gentlemen now occupying and working the mines are lawfully possessed. It is understood that the present owners of the Flagstaff and adjoining mines have renewed their offer to make over the same to a new company, Mr. Pearson, it is said, being entrusted with the negociations. The recent decision at Washington in the Tarbett case appears to be but a barren victory, and in no way interferes with the present holders or their rights to transfer the property. On the other hand, there is a letter from the secretary of the existing, or recently existing, Flagstaff Company, in another column, which appears to indicate that the Americans at the mines, in their anxiety to sell to anyone at any price, so that they can only touch money, are playing Pearson against Vincent, and *vice versa*, in a way not calculated to retain the confidence of capitalists, even if they had any previously.

In Hydraulic or Gold Washing Companies shares there has been a little more movement, and favourable reports have been received from several of the concerns. Placerville, 2⅛ to 2⅜; a telegram received during the week announces a further parcel of ore crushed—240 tons, yielding $10 per ton. This is low-grade ore, which they are compelled to raise in opening on the vein. The Mountain Democrat (June 21) states that reports are current of highly encouraging developments at the Placerville Gold Quartz Mining Company's claim. Particulars are withheld, but the recent purchase of the St. Lawrence Mill, the best and most complete quartz mill property in the county, and active preparations for its immediate removal to the claim of the above-named company, give assurance that the favourable reports have a solid foundation. Blue Tent, 2 to 2¼; washing steadily in progress, with plenty of water. Birdseye Creek, ⅜ to ⅝; the result of June washing, as announced by telegram during the week, in gross return $8500; profit, $4000; remittance, $3500. This is very satisfactory.

In Lead Mine Shares the amount of business doing has been very limited, and in many cases lower prices have had to be accepted in order to effect sales, but the prospect of the market is considered to be better than for the last two years, and certain speculators are said to be purchasing shares when they are to be had below current quotations in anticipation of the approaching rise which they confidently anticipate. A well-informed correspondent writes:—"It is satisfactory to observe a better demand for lead, and a considerable advance is expected in English pig-lead, owing to the continued rise which is now going on in America. The price of United States' lead at St. Louis some time ago was at 13*l.* 15s. to 14*l.* per ton; it has now risen to 16*l.* 10s. to 17*l.*; whilst at New York it fell to 14*l.*, and has now gradually gone up to 17*l.* 10s. to 18*l.* 10s. per ton. English pig now being only at 13*l.* 10s. to 13*l.* 15s., it follows that it cannot be exported at pounds a ton cheaper to China, India, &c, than American pigs; thus England will get back now some of her old export trade."

Van, 15 to 16; although the quotation is somewhat lower than last week, there is no change at the mine, which looks as well as ever. Grogwinion, 2½ to 3; the mine continues to look well. Frongoch, 1¾ to 2; good accounts are received as to this property, and capital progress making at all parts. Wye Valley, 1¾ to 1¾; the prospects in the deep level are still bright, and good discoveries are considered near at hand. West Wye Valley, 1¾ to 1¾; no fresh news; prospects good. Red Rock, 1¾ to 2¼; a parcel of 40 tons of lead has just been sold. Mine looking well. Caron, 2 to 2½; no fresh news. Crosswood, 1 to 1⅛; Mawston, 1⅛ to 2.

Mineral Corporation, 10 to 11; the unusually bad weather has interfered with operations here as everywhere else. The manager writes that surface operations have been much impeded by the heavy rains, but still they are preparing everything as fast as possible, and the large reservoir is filling quickly. The lode in the No. 3 adit end at Hafna, in which there is no particular change, still looks well, and they have now communicated No. 3 level with No. 2 adit, which has well ventilated this part of the mine, and also opened out a large section of good paying ground. At Great D'Eresby Mine they were putting down the tramway at No. 5 adit, and by this time the work is no doubt completed.

Pant-y-Mwyn, 2½ to 3; the mine is reported to be looking well throughout; the Day level has been closed for nearly a mile, and the manager is considered to deserve great credit for having up to the present surmounted the difficulties he has had to contend against. There are 85 men and boys now employed, and the returns, he believes, will shortly be increased to 100, or likely 150 tons, monthly. Rhydalun Mine is reported to be looking well throughout; they have again intersected the vein in the eastern measures. Shares are said to have changed hands at 11*l.* to 11*l.* 10s. A Loughborough correspondent has written rather strongly with regard to a proposed transaction in these shares, but it is stated that the London firm mentioned intend at once to effect a satisfactory arrangement.

Dyliffe, 1⅛ to 1⅜, and in demand; the mine is looking better, and a sale of 45 tons takes place this week. It should be remembered that these mines contain three of the richest lead lodes in Wales, and which gave such enormous profits to Messrs. John Bright, Cobden, and party. The mines being situated near to the celebrated Van Mine, and with the anticipated advance in the price of lead, ought before long to re-enter the Dividend List.

Pateley Bridge, ⅜ to ½; the Rake vein in the 30 east is presenting a very encouraging appearance, and looks likely to improve. The sump winze below this level is in full course of sinking; lode worth 10 tons per fathom. Fielding's vein in the 20 and 30 is looking well, and turning out about 1 ton lead ore per fm. No other change.

Subjoined are the closing quotations:—

Assheton, ⅜ to ½; Carn Brea, 22 to 24; Devon Great Consols, 1⅜ to 1⅝; Dolcoath, 22 to 24; East Carndon, ⅜ to ½; East Van, ⅞ to 1⅛; Gwennymynydd, 4 to 4¼; Glyn, ¾ to ⅞; Great Laxey, 15 to 16; Leadhills, 1⅛ to 2; Marke Valley, ⅜ to ½; Patsley Bridge, ⅜ to ½; Penstruthal, 4s. to 6s.; Roman Gravels, 7⅛ to 8; Rookhope, 1s. to 3s.; Tankerville, 2¾ to 3¼; Tincroft, 7⅛ to 8; Van, 15 to 15; West Assheton, ⅛ to ⅜; West Chiverton, 2 to 2⅛; Wheal Crebor, 2¼ to 2¾; Almada and Tirito, ¼ to ⅜; Birdseye, ⅛ to ⅜; Blue Tent, 2 to 2¼; Canada Gold, 2 to 2¼; Cape Copper, 27½ to 28¼; Chontales, 6s. to 8s.; Colorado United, 1⅜ to 1⅝; Don Pedro, ¼ to ⅜; Eberhardt and Aurora, 2¼ to 2⅜; Exchequer, 3s. to 8s.; Flagstaff, 1 16th to 3 16ths; Frontino and Bolivia, 2 to 2¼; Huitzfali, 1¼ to 2; I X.L., 3s. to 5s.; Javali, 5s. to 7s; Kapanga, ⅛ to ¼; New Quebrada, 2 to 2¼; Pestarena, 2s. to 4s.; Placerville, 2¼ to 2⅜; Plumas Eureka, 2⅛ to 2⅜; Port Phillip, ⅜ to ½; Richmond Consolidated, 8 to 8¼; St. John del Rey, 255 to 265; Sierra Buttes, 2 to 2¼; United Mexican, 3 to 3⅛.

At the Swansea Ticketing, on Tuesday, 1352 tons of copper ore were sold, realising 6559*l.* 8s. The particulars of the sale were—Average standard for 9 per cent. produce, 78*l.* 17s. 10d.; average produce, 9; average price per ton, 4*l.* 17s.; quantity of fine copper, 122 tons 11 cwts. The following are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper
June 24	1788	£77 12 0	10¾	£ 5 17 0	10s. 8¾d.	£53 12 4
July 8	1352	78 17 10	9	4 17 0	10 8	53 10 6

Compared with the last sale, the advance has been in the standard 1*l.* 6s., and in the price per ton of ore about 2s. 4d. The Betts Cove ore gave a produce of 8¾, and sold at 10s. 5½d. per unit; Berehaven, produce 10¼, per unit 12s. 2d. On July 22 there will be offered for sale 1413 tons, from Betts Cove, Union, and Virneberg Mines.

ARENDAL MINING AND SMELTING COMPANY (Limited).—The first annual general meeting was held at the Douglas Hotel, Newcastle, on Thursday, Mr. Wm. Benson in the chair. The directors reported that about 1500 tons of copper ore, averaging 10 per cent., were already at surface and broken, chiefly from drivages and sinkings. There had been some delay in the smelting operations, but sales of ore and regulus were about to commence. A large quantity of ore ground had been laid open, and at least 100 more men could soon be put to work underground at breaking and raising ore. The directors, from their extended knowledge of the property, believed it had much improved in value, and that it would become a largely producing and profitable concern. The proceedings passed off satisfactorily, and a vote of thanks was passed to the Chairman.

CHONTALES CONSOLIDATED MINING COMPANY.—We are glad to learn that the whole of the 5000*l.* debentures are subscribed for, and the company will now continue its operations. It is also satisfactory to learn that the last remittance of gold from the mines, valued at 689*l.*, realised 739*l.* 10s., or 50*l.* 10s. over the manager's estimate.

NEW THARSIS COMPANY.—We understand that important negociations with regard to the working of this property are now proceeding, and that an offer has been made to the company to purchase the entire output of the mines at profitable prices.

WHEAL CREBOR continues to look remarkably well. The winze sinking below the 108 is going down through a fine course of ore, from which the lower level (the 120) is now only distant about 2 fms., and the lode in that level improving as it advances. The new shaft is all but completed to the 48, and it is expected in the course of a few weeks four levels in the New Crowndale ground will be in ore, thus a very large area of ore will be laid open, from which the profit will be great.

WEST WHEAL PEEVOR.—The south lode of Wheal Peevor intersected in West Wheal Peevor is opening out richer than expected, so much so that Capt. White anticipates that the profits on working will nearly pay the cost of the erections. This lode is one of seven seen in West Peevor Mine, of which should only half prove productive will render this one of the most profitable mines in the county.

BRYN GLAS (Silver-Lead).—A company has been privately formed to develope the large deposits of silver-lead which have already been proved to exist in this valuable property, and we understand that operations on a very extensive scale are to be commenced forthwith. The Bryn Glas Mine is situated near Ponterwyd, in Cardiganshire, one of the richest lead-producing districts in the Principality, where the late Sir Hugh Middleton accumulated the enormous wealth which enabled him to carry out his great scheme of bringing the New River to London. This mine, according to Pike's records, has already produced 3114 tons of rich silver-lead at the shallow depth of only 22 fms. from surface—a result hardly, if ever, yet achieved by any mine hitherto discovered in Cardiganshire, or perhaps in the Principality. The new company go to work with the advantage of having plenty of ore ground to work on, also adequate machinery, plant, buildings, &c., all ready to commence operations, and full confidence is entertained of making hand some profits within three months from the commencement of operations. We understand, also, that a board of direction has been formed, in which a practical knowledge of mining is not its only recommendation.

ROCHE FELSPAR.—The spar in each of the new drifts continues to yield large quantities of splendid spar, quite equal, if not superior, to the spar in bottom of quarry. In the bottom of each drift the spar is much purer and whiter than at the top, thus proving that we have another bed of spar underneath both drifts. The spar in the new drifts being so close to surface we have not required the engine for the past fortnight, and if we continue to work the top stopes we shall not require it for a long time to come. If the weather continues so fine as it is to-day we shall be in a position to work both bottom and top stopes of the quarry in conjunction with the drifts, which will tend to greatly increase our output. We have just shipped 100 tons of spar for the Continent, and have large orders in to fulfil at once. All that we want is fair weather to get out the spar on the picking floors. We cannot too highly estimate the importance of the recent discovery of spar in the two drifts. The quarry has been let on contract at a price which will leave large profits to the company.

REDUCTION OFFICER.

WANTED, the SERVICES of a THOROUGHLY QUALIFIED REDUCTION OFFICER, to TAKE CHARGE of the REDUCTION DEPARTMENT in an extensive Gold Mining Establishment abroad. Climate perfectly healthy.

Applications, stating full particulars as to experience, previous occupation, &c., to be addressed to "R. O.," care of Messrs. J. Burbidge and Co., Advertising Agents, 62, Moorgate-street, London, but no one need apply who has not had practical as well as theoretical experience in the Treatment of Gold Ores, nor unless he can produce satisfactory testimonials.

WANTED, a SITUATION as MANAGER of LEAD SMELTING and DESILVERISING WORKS, either at home or abroad, by a THOROUGHLY EXPERIENCED YOUNG MAN, who has directed the building of works abroad, and who has instructed natives in these processes.

Address, "Smelter," Monkton, West Boldon, via Newcastle-on-Tyne.

WANTED, a SITUATION as LEAD MINE MANAGER—fifteen years' experience in Lead Mines. Has a good knowledge of the Bearing Measures; can use the compass, and draw plans of the workings, &c. Good references given.

Address, C. JONES, 51, Hufling-lane, Towneley, Burnley, Lancashire.

PROMOTER OF COMPANY WANTED, for a PROVED GOOD COAL AND IRON ORE PROPERTY; also a VALUABLE SLATE QUARRY.

Address, "Mineral Engineer," MINING JOURNAL Office, 26, Fleet-street, E.C.

TO MINING COMPANIES.

THE ADVERTISER seeks a RE-ENGAGEMENT. Accustomed to LEAD MINING, DRESSING, ERECTION OF MACHINERY, &c. Experience in France, Spain, &c. No objection to go abroad. Good references.

Address, "G. R. T.," Clevedon.

BONA FIDE AND SAFE INVESTMENTS.

ROCHE FELSPAR COMPANY (LIMITED), AND BELL TIN AND COPPER MINE (LIMITED).

These SHARES cannot fail to TAKE a PROMINENT POSITION in the MARKET shortly, and a great advance in price. See *Mining Journal* of the 7th for the report of the recent discovery of felspar, and this day's Journal for the analysis of the spar.

For full particulars and prospectus, apply to T. R. PARKYN, Jun., Finsbury House, Roche.

SOUTH DARREN LEAD MINE.

FOR SALE, FIFTY FULLY PAID UP SHARES, at 38s. each, in this excellent Mine, now making large and regular monthly returns of rich silver-lead ore.

Apply by letter to "W.," MINING JOURNAL Office, 26, Fleet-street, London.

CANADA GOLD COMPANY (LIMITED).—These SHARES CANNOT FAIL shortly to take a VERY IMPORTANT POSITION, and a GREAT ADVANCE in PRICE.

For full particulars, apply to JOHN BATTERS, 4, Austinfriars, E.C.

VAN RAILWAY,
14a, Austinfriars, London, E.C., July 7th, 1879.

Notice is hereby given, that the ORDINARY HALF YEARLY GENERAL MEETING of shareholders in this company will be HELD at the offices of the Van Mines, near Llanidloes, on TUESDAY, the 22nd day of July next, at One o'clock in the afternoon precisely, to pass the accounts, elect directors and auditor, and to transact the general business of the company.

The Transfer-books will be closed from the 16th to the 23rd instant, both days inclusive.

By order,
W. J. LAVINGTON, Secretary.

MR. WILLIAM BREDEMEYER, MINING, CONSULTING AND CIVIL ENGINEER, U.S. MINERAL SURVEYOR FOR UTAH AND IDAHO. NOTARY PUBLIC.

Geological examinations; reports on mining properties; surveys mines, rail roads, and canals, and superintends the workings of the same. Prepares estimates and plans for opening and working mines. Expert on mining questions before the Courts.

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PURCHASERS OF

LEAD ASHES, LEAD SLAGS, SULPHATE OF LEAD, HARD LEAD BRASS SLAGS AND ASHES, COPPER REGULUS, MATTE, SCORIA, TIN ASHES, TERNE ASHES, &c., and MIXED ORES or REFUSE containing LEAD, COPPER, TIN, or ANTIMONY.

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5, CHAPEL STREET, LIVERPOOL,

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MANGANESE, ARSENIC FLUOR-SPAR, WOLFRAM, BLENDE, CALAMINE, CARBONATE and SULPHATE OF BARYTES, ANTIMONY ORE, CHROME ORE, MAGNESITE, EMERY STONE, PUMICE STONE OCHRES AND UMBERS, CHINA CLAY, LEAD ORE FOR POTTERS TALC, PHOSPHATE OF LIME, &c.

AUSTRALIAN TIN—PRIZE MEDAL, 1877.

THE UNDERSIGNED is PREPARED to EXECUTE ORDERS for the CELEBRATED

"KANGAROO" BRAND.

S. L. BENSUSAN.

Kangaroo Tin Works, Sydney, December, 1878.

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MESSRS. JAMES AND SHAKSPEARE beg to give notice that their NEXT SALE will take place on Tuesday, the 15th inst., at TWO P.M., at the Baltic Sale Room, Threadneedle-street, when they will OFFER about ONE THOUSAND ONE HUNDRED AND FORTY-SIX TONS of WALLAROO COPPER in CAKES.

Catalogues may be obtained at their offices, 10, Austinfriars, E.C., London, and 5, Castle-street, Liverpool; also of Mr. DUDLEY DOCKER, 38, Cannon-street, Birmingham.

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Assays or Complete Analyses made of Copper, Silver, Lead, Zinc, Tin, and other Ores. ASSAYING TAUGHT.

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MR. W. J. JOHNSON, many years Chief Manager of the W.B. Lead Smelting Works, having left that establishment in consequence of the werks being now entirely closed, is OPEN to be CONSULTED, and to UNDERTAKE the ERECTION of PLANT of the most improved kind; and ADVISE on the MOST ECONOMICAL METHODS OF LEAD SMELTING and DESILVERISING.

Address the above, Morpeth.

Price One Shilling.

MINING SHARES, AND HOW TO DEAL IN THEM.
By E. R. GABBOTT.

MINING JOURNAL Office, 26, Fleet-street, E.C.

LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
July 9	Red Rock	40	£ 7 15 0	Par Smelting Works.
10	Talargooh:—			
	Maesyrewddu	80	9 0 6	Adam Eyton.
	Coetia Llys	20	9 1 0	Walker, Parker, and Co.
	—North Hendre	50	8 8 0	ditto
	— ditto	50	8 8 0	ditto
	—Prince Patrick	50	8 11 6	ditto
	— ditto (round ore)	15	10 7 6	Adam Eyton.
	—Rhydalun	25	8 8 6	ditto
	—Wagstaff	15	7 16 6	ditto

BLENDE.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
July 9	Talargooh	60	£ 3 0 0	Bagilt Smelting Co.
—	ditto	60	2 16 0	ditto
—	ditto	24	2 14 0	ditto
—	ditto	24	2 14 0	Crown Zinc Company.
—	ditto	72	2 14 0	Vivian and Sons.

COPPER ORES.

Sampled June 25, and sold at Swansea, July 8.

Mines.	Tons.	Produce.	Price.	Mines.	Tons.	Produce.	Price.
Betts Cove	109	8¾	£4 11 0	Copper Ore	89	5½	£2 8 6
ditto	109	8¾	4 9 6	ditto	89	5½	2 8 6
ditto	108	8¾	4 10 6	ditto	15	8⅞	4 11 0
ditto	108	8¾	4 12 0	ditto	14	3⅞	1 12 0
ditto	108	8¾	4 11 6	ditto	9	9½	5 1 0
ditto	107	8¾	4 12 6	Copper Pre.	9	50⅞	26 15 6
ditto	106	8¾	4 12 6	ditto	2	12	5 6 0
ditto	105	8¾	4 12 6	Copper Ore	11	16⅝	8 19 8
Berehaven	85	13⅞	8 5 6	Tigrony Pre.	10	42	22 1 0
ditto	75	8¼	5 1 6	Copper Ore	9	4¾	2 1 6
ditto	75	8¼	5 2 6				

TOTAL PRODUCE.

Betts Cove	860	£3934	1 6	Copper Ore	11	£ 93	9 0
Berehaven	235	1468	7 6	Tigrony Precipi	10	220	10 0
Copper Ore	216	567	15 0	Copper Ore	9	18	13 6
Copper Precipitate	11	251	11 6				

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Copper Miners' Company	231	£ 1,043 17 0
P. Grenfell and Sons	24	242 18 0
Vivian and Sons	109	495 19 9
Williams, Foster, and Co.	539	2,807 0 6
Mason and Elkington	337	1,167 0 8
Charles Lambert and Co.	13	154 12 3
Landore Copper Company	100	848 0 9
Total	1352	£ 6,559 8 0

TOTALS AND AVERAGES.

	21 cwts.	Produce.	Price.	Per unit.	Standard.
Whole sale	1352	9	£4 17 0	10s. 8d.	£78 17 10

Copper Ores for sale on July 22.—Betts Cove 760—Union 403—Virneberg 197—Copper Ore 53.—Total, 1413 tons.

Notices to Correspondents.

*** Much inconvenience having arisen in consequence of several of the Numbers being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

DON PEDRO NORTH DEL REY GOLD MINING COMPANY.—Can any reader afford your readers some information as to how matters stand with respect to this mine? Has Captain Vivian succeeded in proving it to his satisfaction, and when may we hope to receive a dividend?—IMPATIENT SHAREHOLDER.

THE COPPER MARKET, AND ITS PROSPECTS.—We are obliged to "R. D. A." (Sydney) for his communication: see letters in last week's Journal.

Received.—"W. B. M." (Ambrose Lake)—"H. B." (Truro): Thanks; but our Correspondent has fully referred to the subject—"W. T. C." (New Zealand Kapanga)—"J. E. S."—"W. J." (Brighton)—"Shareholder" (Richmond)—"Enquirer" (Broadlands): The letter on Gunnislake (Clitters) Mine could only appear with the writer's name attached Various matters would have to be enquired into, and the charges against the committee and agents substantiated—"R N."—"Shareholder" (Redruth)—"Shareholder" (Hingston Down)—"A Richmond Shareholder" (Missouri Lead Mining and Smelting Company)—"Chemical Agency"—"Shareholder" (West Tolgus)—"W. T." (Ballydehob): Perhaps next week.

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, JULY 12, 1879.

THE RATING OF MINES AND MINERALS.

The depression which has prevailed in mining of every kind for a considerable time, and the losses that are occasioned at many places by continuing operations for the sole purpose of finding employment for workmen, and so keeping them and their families from becoming a serious burden to the great body of ratepayers, should secure for mineowners some immediate consideration from the authorities whose duty it is to assess the rateable value of mineral property. Unless this is done there is the strongest probability that, in addition to the large number of mines now entirely standing, others will be compelled to be closed as well, for the drain upon capital during the last year or two has been most serious so far as mining operations are concerned. This has not been confined to those engaged in any particular branch of mining industry, but appears to have affected nearly all. If we take metalliferous, coal, or ironstone mines it will have been seen that of late we have had frequently to notice in our reports the heavy losses sustained by some mining companies and firms, the total collapse of others, and just now the stoppage of several mines for an indefinite period, for no one is in a position even to hazard an opinion that would be accepted as to when trade generally is likely to improve. We have it on the authority of many large mineowners that part of the wages they have been paying has come out of capital, whilst in addition to this they have had to pay vast sums in the shape of rates, and now they say they cannot bear these burdens any longer. Even so wealthy, considerate, and liberal a mineowner as the Duke of DEVONSHIRE has found the loss and drain upon him too much, for he has deemed it necessary through his agent to give notice that he purposes closing his Grassington Lead Mines, near to Skipton, which for something like 30 years have found profitable employment for a large portion of the male inhabitants of Grassington and Hebden, but which for some time have been gradually declining. They have, however, been kept going in the expectation that trade would improve, and as there is no sign of such taking place they are to be closed. In the more distant North a similar course has been adopted at some of the mines belonging to Mr. W. B. BEAUMONT, the largest producer of lead in the kingdom, and the owner of the well-known Allendale and East and West Weardale Mines. In Cumberland several of the mines are doing little or nothing, and of course are not paying, whilst in Derbyshire the lead mines for a considerable time have been anything but a source of profit, so much so, indeed, that the Duke of DEVONSHIRE, as lessee of several under the Crown, is about to be "interviewed" by the sub-lessees for the purpose of inducing his Grace to reduce the royalties, and so allow of work being continued. In North Wales, also, lead mining cannot be said to be in anything approaching a flourishing state, whilst the rating varies a good deal, in some instances the basis on which the gross estimated rental is arrived at being upon the rent and royalty paid, and in others on the royalty only, whilst in others the engines and machines are separately rated. From the last return, issued in 1877, the aggregate rateable value of all our mines in England, excepting coal and iron, was 133,052*l.*, the gross estimated rental being 145,012*l.* The rateable value in Wales was 62,342*l.*, and the rental 66,321*l.* This would make the aggregate rateable value of the metallic ore in England at the rate 2*l.* 18s. per ton, and in Wales 2*l.* 14s. per ton.

The ironstone and coal mines which are the most important of our mining industries, owing to the many thousands of men who are employed in them, and their immense productive power and the vast amount of capital sunk in them, have suffered more than others. A great many ironstone mines have of late been closed, while collieries have been a drug in the market, and several that have recently been put up for sale by auction have not had a single bidder. But several of the owners are now seeking a little relief by a reduction of the local taxation, and in this important movement some of the leading owners of ironstone mines have taken the initiative, and there is no doubt but those in other districts will follow the same course. The Guisborough Union has within it the principal of the Cleveland ironstone mines, the aggregate rateable value being put down at 117,571*l.* At these mines, like many others in different parts of the country, the rate was made some years since, when trade was brisk, the price of iron considerably higher than at present, and property of every description in fact was assessed at a much greater value than it now is. It was under these circumstances that at the North Riding sessions a few days ago the ironstone mineowners in the Guisborough Union sought for a reduction of the rate levied upon their property for county purposes by the magistrates, acting as a county rate committee. The rate was made in 1875, and lately the assessment committee of the Union for Poor Law purposes had made a reduction of 12½ per cent., and this it was thought the magistrates would accept as a basis for the county rate, seeing that the depression in the iron trade had reduced the value of mining property, and rendered many miners' houses unoccupied. When the assessment was made in 1875 it was considered exceptionally high, the mines being divided into three classes, and if the rateable value of those in the first class was taken at 9d. per ton, the second would be 8d., and the third 7d. per ton, yet the royalties paid were only about 5½d. per ton, so the rateable value appears to have been most unfairly proportioned when taken *pari passu* with the royalties charged. It is also different to what is charged even in other parts of the North and West Ridings. This we found by reference to the last parliamentary paper issued with respect to the rating of mines, for in Stokesley the annual aggregate rateable value is the same as the gross estimated rental, the mines being rated at the latter. At Malton in determining the rateable value 10 per cent. is deducted from the gross estimated rental, whilst in the Whitby district one-sixth is deducted from the gross estimated rental to arrive at the rateable value. At Bramley, near Leeds, the assessment is of a singular character. The basis on which the gross estimated rental of the ironstone mines is reached is by valuing the property at so much per square yard, and deducting from it one-sixth; and at Holbeck, in the same district, the rental is arrived at by fixing it at 10*l.* per man employed, and allowing a deduction of one-sixth. Yet in Guisborough Union the assessment is considerably in excess of the royalties charged by the mineral owners, whilst those who have been working the mines have to pay rates for the cottages that are standing. In fact, nearly the whole of the rates are paid by the latter, for in the township of Marske, out of a rateable value of 25,193*l.*, only 3767*l.* consisted of agricultural land and farm houses, and in all the other townships the proportionate rating was about the same. Seeing that the rate in the first instance was made on what the ironstone would realise in the market per ton, and when it has fallen in price 50 per cent. and upwards, one would have thought the mineowners would be relieved of some portion of the burden they have long borne uncomplainingly. But the magistrates held that even the 12½ per cent. reduction could not be granted, more especially as a new valuation of the Union and a new return of the property tax would be made during the present year. This is certainly a great hardship upon the Cleveland ironstone owners, for we have found on reference to the returns given of the value of the ores in that important district that they now do not realise more than one-half what they did five or six years ago. For arriving at this conclusion we may fairly assume that in fixing the rate for 1875—that now in force—the value of ores in the previous year must have formed the most important ingredient. Now, we find from the returns of the value of the ores raised in Cleveland that in 1874 it was rather more than 6s. per ton, in 1875 it had fallen to 4s. 1d. per ton, in 1876 it had further declined to 3s. 7d. per ton, in 1877 to 3s. 3d. per ton, and in 1878 to 3s. per ton. The value has, therefore, fallen one-half since 1874, the year which, as we have just stated, must have formed the basis of the rateable value for 1875, yet the magistrates consider the latter should be continued.

But the most extraordinary matter in connection with ironstone mines—as well, indeed, as with all others—is the different systems adopted in rating, and the great inequalities which necessarily exist. At Barrow-in-Furness, where the value of the hematite in 1876 has been put down at 14s. 6d. per ton, the gross estimated rental is arrived at by charging 2s. 3d. per ton on the ore raised, 2s. being for the royalty, and 3d. per ton for engines, tramway, &c., and from this no deduction is made in determining the rateable value. In Cumberland at the hematite mines in the Bootle Union deductions are allowed for rates and taxes and repairs, and insurance of buildings and plant, the gross rental being fixed by deducting from the gross estimated receipts, less working expenses and allowance for tenants' capital; whilst at Whitehaven the gross estimated rental of the minerals is taken, an allowance of 25 per cent. being made in respect of shaftage and fixed plant. In North Wales we find in one instance the estimated rental and rateable value is 3¾d. per ton as royalty paid, and in another 2s. per ton with certain deductions. With these peculiarities and anomalies in the rating of mines engaged in raising ironstone it is evident great injustice is done to some of the mineowners who have to pay so much higher rates than are levied on others getting material of similar value, and shows the urgent necessity which exists for securing uniformity of rating by a system at once simple and easily applied.

Colliery owners have been placed in a similar position to those connected with ironstone mines as regards valuation for rating purposes. Many of the coal mines were rated a few years ago when prices were exceptionally high, and now they have come down to a point which leaves no profit, but leads to certain loss, they are continued without abatement. But in several places we find appeals are being made against the assessments, which in most instances will doubtless be rectified as a matter of right. In collieries, however, the difference in the mode of rating and the value put upon the coal is very great. In the largest Union of Durham—that of Lanchester, where the aggregate rateable value is 91,974*l.*—the rental is based on a charge of 1s. 3d. per chaldron of 53 cwts. At Sunderland the royalty is calculated at 5½d. per ton, and at Weardale it is taken at 9d. per ton of coal raised, exclusive of plant and machinery. In some parts of Gloucestershire the rating is arrived at by poundage; in some instances 2s. 6d. in the pound on all coal raised, or the same amount on annual receipts. In Lancashire, at Rochdale, the rateable value in some cases is fixed after the rate of 6d. per ton, at Preston 8d. per ton, where the coal is got and raised in the same parish, and at some other places a charge is made on the number of men getting coal, varying according to the situation and thickness of the seam of coal. In Monmouthshire, the gross estimated rental is fixed by 6d. per ton at Abergavenny, with 25 per cent. off for rateable value; but at Monmouth it is 6d. per ton without any deduction, and at Pontypool 8d. per ton on the royalty, with no allowance for the rateable value. In one instance at least a colliery was rated in 1873, when coal was four times the price it now is, and the rate has not yet been altered. Without going into further details we think we have shown that the present rating of mines is far too high, and however just they might have been when made are now most unfair, unjust, and oppressive, and if not speedily changed in the altered state of trade and the low price of both metals and minerals must lead to the stoppage of many mines, and so largely increase the number of miners now out of employment in nearly all parts of the kingdom.

THE PRODUCTION OF COAL.

From the Annual Report of the Government Inspectors of Mines we find that the production of coal in 1878 shows a decrease, as compared with 1877, of 1,567,905 tons. Thus we have once more a proof that the prophecies indulged in some few years since, and even now entertained by many mining experts, that the consumption of coal will go on increasing at a rate similar to that of the population has no foundation in fact. There are many reasons why such an increase should not go on year after year. It is well known that the saving of fuel in its application to mechanical purposes has become one of the most important questions of the day, owing to the constant substitution of machinery for physical labour. It is admitted that in the best steam-engines that are now produced only a comparatively small portion of the power of the fuel is actually obtained. But this serious loss is being gradually overcome, and the more thorough utilisation of coal for the generating of steam is the problem that is now in course of solution by our principal engineers. A saving in fuel also means economy in steam and a saving in boilers, so that we are told on high authority that in good compound engines the consumption of fuel per indicated horse-power per hour, on an average, is only about 2 lbs., and sometimes even less than that. But even that quantity will be considerably reduced in time, and it may here be remarked that the old type of engines used in our works and manufactories are fast being superseded by those working at a good pressure, with steam superheated to a moderate extent, and the cylinders in which the expansion takes place steam-jacketted. Such engines must lead to a considerable diminution in the consumption of coal. In another direction there has of late years been a marked falling off in the consumption of coal—that is in the production of pig, for which many millions of tons are annually required. This saving will be much larger when the direct process of making steel from iron comes into operation, which it will do before long. As to the consumption for household purposes, it has been declining per head ever since the famine prices of 1872 and 1873 taught all classes the necessity for economising. These are simple facts with respect to the consumption of coal, and should not be overlooked by those who have taken a gloomy view of the future of England's prosperity, in the belief that her stores of fuel, on which her greatness depends, will be exhausted in a certain time owing to the annual increase in the consumption of coal for all purposes.

In connection with the decrease in 1878 as compared with 1877 we have the noticeable fact that in Durham and Northumberland, in which the annual produce has been the largest, the decrease was no less than 1,337,811 tons. On the other hand, the southern portion of the Midland field, comprising Derbyshire, Notts, Leicester, and Warwickshire, shows an increase on the year of 536,298 tons. The proximity of the field to the Metropolis no doubt accounts for a good deal of this, as the Midland Railway now carries a much larger tonnage of coal to the Metropolis and intervening stations than any other line. West Lancashire and North Wales stand in a similar position, showing an increase on the year of 225,052 tons. South Wales following in the same direction with 207,996 tons, and the East of Scotland with 215,186 tons. On the other hand, Yorkshire shows a decrease, as well as North Staffordshire, Cheshire, Shropshire, and the East of Scotland. Seeing for a considerable portion of the year the miners in most districts were working short time it is evident the productive power of the country in coal is considerably beyond the requirements for all purposes; even with a general revival, not only of the iron trade but of all others as well, the quantity of coal which would be required would fall considerably below what could be supplied. We may say for a series of years the consumption of coal, notwithstanding the yearly increase of our exports, has fluctuated a good deal, as will be seen from the tonnage raised since 1860, which we give below, together with the gross value and the estimated value per ton.

Year.	Tons.	Value.	Per ton.
1861	86,419,941	£20,908 803	4s. 10d.
1862	81,638,338	20,499.584	5 0
1863	86.292,215	21,573,053	5 0
1864	92,787.873	23,197,968	5 0
1865	98,150,587	24.537.646	5 0
1866	101,754,294	25,407.635	5 0
1867	104,500,480	26,125,145	5 0
1868	103,144 157	25 785,289	5 0
1869	107,427.557	26,856,889	5 0
1870	110,434,192	27,607,798	5 0
1871	117.352,028	35,205,608	6 0
1872	123,497,316	46 311,143	7 6
1873	127,016,747	47 631,280	7 6
1874	125,043,257	45,849,194	7 4
1875	131,867,105	46,163,486	7 0
1876	133,344,766	46,670,668	7 0
1877	134 610.763	47.113,767	7 0
1878	132,612,063	43,098,919*	6 6*

* Estimated.

We may here state that there is some difference in the returns furnished by the Inspectors of Mines and Mr. HUNT in his annual and valuable collection of "Mineral Statistics." It will be seen that the increase has not been consecutive, for in some years there has been a decline more or less as compared with the previous ones and *vice versa*, the greatest increases having taken place in 1871, 1872, 1873, and 1875, the three former being years in which the price of coal to consumers was the highest known. It will also be noticed that for ten years the price of coal underwent no change whatever.

OUR RAILWAY IRON ABROAD.

The foreign and colonial demand for our railway iron exhibited great dullness in June, the whole exports for that month having been only 40,992 tons as compared with 51,198 tons in June, 1878, and 63 970 tons in June, 1877. The languor of the Russian, Spanish, and Italian demand alone accounts for the dullness observable in last month's figures. Thus the exports of our railway *materiel* to Russia, Spain, and Italy in June compared as follows with the corresponding exports in June, 1878, and June, 1877:—

	June, 1877.	June, 1878.	June, 1879.
Russia ....Tons	16 505	13,195	4,271
Spain	2,627	3 607	1,367
Italy	1,899	5,505	2.323
Total	21,031	22,307	7,961

One remarkable feature in the exports for last month is the shipment of 4834 tons of our railway iron to the United States as compared with 312 tons in June, 1878, and 19 tons in June, 1877. We presume that the figures for last month include some of the rails recently ordered at Sheffield by Mr. W. H. VANDERBILT for the New York Central and Hudson River Railroad; but however this may be, it is clear that the protectionist legislation of the United States Congress has not been entirely successful in driving English rails out of American markets. Our ironmasters' deliveries of rails to the United States have certainly been most woefully reduced, but still they are not absolutely extinct. The colonial demand for our rails was scarcely maintained last month; but it was, nevertheless, of considerable importance. This will be at once seen on an examination of the annexed figures, showing the exports of our railway iron in June to British America, British India, and Australasia, as compared with the corresponding exports in the corresponding month of 1878 and 1877:—

	June, 1877.	June, 1878.	June, 1879.
British America..Tons	8,312	7.364	7,903
British India	6 892	7.349	6,811
Australasia	9,791	5,214	3,011
Total	24,995	19 927	17,725

The decline will be found to have occurred more particularly in the Indian and Australasian demand, and this would appear to indicate that the construction of Australasian and Indian railway is rather slackening than otherwise, notwithstanding the temptingly low prices at which our rails are now obtainable.

If we proceed to deal with the figures illustrating the exports of our railway iron for the first half of 1879 the results disclosed must be pronounced discouraging. Thus the total shipments to June 30 this year were only 209 599 tons, as compared with 247,805 tons in the corresponding period of 1878, and 228,480 tons in the corresponding period of 1877. The Russian and Spanish demand has very greatly declined during the last two years, although our rails appear to have acquired rather a better footing this year in Italy. The accompanying table shows the aggregate shipments of our railway iron to Russia, Spain, and Italy in the first halves of the last three years:

	1877.	1878.	1879.
Russia ....Tons	43 535	26.191	14 900
Spain	11,472	13,371	7,950
Italy	5,061	10,104	10,137
Total	60,068	49,666	32 987

The feebleness of Russian finance and the general check given to Russian industry by the Russo-Turkish war account, no doubt, for the falling off observable in the exports to Russia; but we confess that we had hoped for better things from Spain, as the restoration of peace and order in that country ought to have produced some effect. Our railway iron shipments to the United States to June 30 this year amounted to 7738 tons, as compared with 464 tons and 2502 tons in the corresponding periods of 1878 and 1877. Brazil took 20,056 tons of our railway iron in the first half of this year against 9821 tons and 12,205 tons in the first halves of 1878 and 1877. The aggregate shipments to British America, British India, and Australasia in the first half of this year were 110,765 tons, as compared with 120,346 tons in the corresponding period of 1878. Truly we have fallen upon disappointing times.

THE ISTHMUS OF PANAMA CANAL.

During the last thirty years the advantages to be anticipated from the construction of a ship canal across the Isthmus of Panama have been frequently explained in the *Mining Journal*, and many of the older readers will recollect the highly interesting articles on the subject by our esteemed correspondent, the late Dr. Cullen, but it has remained for Mr. Ferdinand de Lesseps, whose success at Suez suffices to give confidence to capitalists that he is equal to the still greater task, to secure the realisation of the project. Already the preliminary steps have been taken at Paris for the inauguration of an influential international company for carrying out the enterprise. As it is not doubted that the number of shareholders—English and American, French and Spanish American—in such an undertaking will be very large, and that it is most desirable these should be kept in frequent communication with each other, a weekly journal has already been started in Paris, issuing editions in English, French, and Spanish, and the office of editor-in chief has been wisely entrusted to Mr. Th. Pergeline, a French engineer of recognised ability, and a gentle man who has had considerable press experience. The first number of the Canal de Panama—for that is the title chosen for the new journal—gives an excellent preliminary sketch of the proposed undertaking in the three languages, and from this it is evident that the utmost possible attention has been given to the choice of route, and that great care is being taken that there shall be no failure from financial considerations.

Although now 74 years old, Mr. F. de Lesseps retains all the energy which has characterised him throughout his active life. Of the several propositions for uniting the Atlantic and the Pacific by a canal through the Central American isthmus, all were speedily put aside as unworthy of consideration except the Nicaraguan and the Panama lines. The canal by way of Nicaragua appeared to be the most logical and that which was most likely to be accepted. Indeed, the Lake of Nicaragua, forming an inland sea crossed by a river, as the Lake of Geneva is crossed by the Rhone, would singularly facilitate the work to be done. But,

simple as this route was, and although the distance to be canalised was small, there was the inconvenience of a too great number of locks, which would, of course, have interfered with the navigation. "No locks," said Mr. de Lesseps. "No locks, or the enterprise is impracticable," and at the congress recently held at Paris he pointed out that even a single lock in a maritime canal, assuming work to be carried on day and night, would limit the number of ships that could be passed through to 12, or at most 24. Two French engineers—Lieutenant Wyse and Mr. Armand Reclus—suggested that the locks might be got rid of, and Mr. de Lesseps told them to examine the route personally, and let him know the result. They returned, and assured him that two locks would suffice. This was no encouragement to Mr. de Lesseps, who, with the financial assistance of his friends, sent back the two explorers to Panama. Some months afterwards they returned triumphant; they were able to say—"No locks, a level canal; but, on the other hand, a tunnel 6 kilometres long to make through the hard rocks of the Cordilleras."

The announcement that locks could be dispensed with was all that Mr. de Lesseps required, and he lost no time in convening the congress already mentioned, and commencing the inauguration of the enterprise. Acting with all the promptitude compatible with a due consideration of the different plans proposed, the congress assembled in Paris has voted by a large majority the project proposed by Messrs. Wyse and Reclus, of which Colonel Turr is the concessionary. Throughout the proceedings, conducted with his usual energy by Mr. Ferdinand de Lesseps, the greatest urbanity prevailed amongst the cosmopolitan delegates who had been sent to Paris to hold the important consultation as to the best route to be followed to ensure the success of the canal. Mr. Gambetta, who was present at an entertainment offered by the foreign delegates to their French colleagues at the Hotel Continental, expressed his perfect approbation of this grand idea, and rejoiced to think that the congress had met to consider this work of civilisation and progress under the protection of the French flag. Mr. de Lesseps has, we hear, undertaken the management of the colossal undertaking, and states that the first turf will be turned at Panama at the beginning of the year 1880. The supposed time required for the completion of the canal is 12 years. But the veteran of the Suez Canal is convinced that it may be completed much sooner. At any rate the subscription to the shares in the company will be offered to the public in a very short time, and the operations will at once be set about with a vigour and perseverance of which the name of Mr. de Lesseps is a symbol and a guarantee.

UTILISATION OF METALLIC SULPHIDES AS FUEL.

For some months past a considerable amount of interesting discussion has been going on in the *Mining Journal* concerning the ingenious process invented by Mr. JOHN HOLLWAY for utilising metallic sulphides so as to make them form their own fuel, and thus admit of the extraction of the copper or other metal in marketable form in districts where carbonaceous fuel is unavailable, and where the low produce of the ore, or the difficulties of transport, render it impracticable to get the ore to a smelting district. The effect of such an improvement is that many of the poor or low class ores can now be made to yield up their metal in the form of regulus without leaving the mines; this regulus being a compact and valuable material which will bear transport to any reasonably distant market. The process being one which promises to prove of great pecuniary benefit to a very large number of mining districts the opportunity is taken of printing in another column of to-day's Journal a very clear and complete description of the whole invention published by the Society of Arts; no doubt being entertained that so convenient a method of obtaining a sound knowledge of the process will be generally appreciated.

It is explained that the object of the process is to utilise the heat generated by the rapid oxidation of certain mineral substances which have not hitherto been used as sources of heat for smelting operations. The heat thus obtained is employed in the reduction of the furnace charge, which may be composed partly of sulphides and partly of silicious ores. A current of air is forced through molten sulphides, by which means they are very rapidly oxidised. Great heat is thus developed, rendering the process of smelting a self-supporting oparation, therefore no extraneous fuel is required, excepting that employed in raising steam for the blowing engines.

There can be no question that the process is practicable, because experiments have been made on so large a scale as to leave no doubt that very satisfactory results will be obtained in ordinary working. It will be seen that the experiments made at Messrs. CAMMELL'S works, at Penistone, in a Bessemer converter, have proved that by blowing air through molten sulphide of iron, the iron and a portion of the sulphur are oxidised, and if the oxidation is arrested before the combustion of the iron is complete a heavy matt or regulus is obtained, which contains but a small proportion of the iron of the ore, but practically the whole or the greater part of the copper and other less oxidisable metals. In one of these experiments the molten sulphides were run into the converter from a cupola, in which they had been previously melted, and the temperature was kept up until the operation was discontinued—for a period of 10 hours, without the use of any carbonaceous fuel, the heat being entirely derived from the oxidation of the iron and a portion of the sulphur of the lumps of pyrites, which were continuously thrown into the mouth of the converter.

As in the case of all new inventions, and especially inventions of such a character as Mr. HOLLWAY'S, some little mechanical difficulties had to be surmounted, but these were of a trifling character, and did not in the smallest degree affect the principle involved, and which is now acknowledged to be capable of yielding the results anticipated. The process will give the metal in the form of regulus, and the sulphur in its free state, the latter being of great importance in such cases as that of the Tharsis and other pyrites companies. It now only remains for Mr. HOLLWAY'S process to be put into operation at the mines, and in the meantime no higher compliment can be paid to him than that which he received from the Society of Arts, where it was stated "that of all the papers read before the Society during the year Mr. HOLLWAY'S is the one the Council consider the most remarkable and the most important. Should the process at all carry out the expectations of its inventor—and he is supported by some of our leading chemists—it will add one more to the many great inventions which it has been the constant aim of the Society to introduce to the world."

MR. BALCOMBE'S CASE.—The Aberystwith Observer published a special supplement on June 19, containing a temperately written exposition of the facts connected with the case of our esteemed late correspondent Mr. Balcombe. A revision of that notice, with other supporting evidence, is to appear in a pamphlet, of which we have received a proof copy, and from a careful perusal thereof we feel bound to admit that the contents seem incontestably to prove that in the result of the late proceedings against him Mr. Balcombe was the victim of a dire miscarriage of justice. Mr. Balcombe had our full sympathy at the time, and it is probable that the details now so consistently presented in reference to the entire case will enlist public sympathy far and wide, and we should hope lead up to a revision of the judicial code bearing on the evidence. With whatever measures may follow in Mr. Balcombe's interest we have nothing to do; but in common justice and the public good we refer to this pamphlet in the hope that "One and All" whose hands it may reach will give the matter it contains calm and unprejudiced reflection.

ASBESTOS.—At the Ironmasters' Quarterly Meeting at the Birmingham Exchange, on Thursday, considerable attention was directed to the excellent specimens of manufactured asbestos exhibited by Mr. J. E. Hartley, of Newhall-street. Rope packing, millboard, and felt were exhibited, all manufactured from the long-fibre asbestos produced at the Valtelina and Val d'Aosta Mines, belonging to Messrs. Furse Brothers and Co., of Rome. It was explained that hitherto it has been found impossible to make a pure asbestos rope of long fibre entirely free from grit, stone, or any substance which could injure the machinery it is applied to; hence various devices to cover short fibre with other substances. At length, however, Messrs. Furse Brothers and Co. have arrived at producing a simple twisted rope, made from pure long fibre, and they are confident that those who once try it will recognise its superiority over any other. The great expense incurred in obtaining, selecting, and cleansing the fibre renders the cost of production higher than that of the inferior manufactures, but a short experience will convince all practical persons that it is vastly the cheaper in the long run. It is self-lubricating, resists high steam-pressure, and does not heat the piston-rod. In addition to rope packing, Mr. Hartley also showed millboard made of 95 per cent. pure asbestos, self-lubricating, and perfectly harmless to metal surfaces, and explained that it can be supplied in sheets as above, which can also be joined together by a special cement, or in rings and joints of any size, shape, and thickness. Its principal uses are where any escape of steam, and therefore waste of power, is to be prevented. It is also useful to isolate fire in wooden buildings, and for roofs of wooden buildings in hot climates, and is specially adapted for floorings in fire-proof buildings, or for preserving oak floors from injury by heating apparatus. Paper millboards have been tried for this purpose and have failed. Felt, writing, printing, and wall-papers, fibre, &c., were also exhibited, and it was stated that asbestos cloth and putty could be supplied if desired. High testimonials have been received from those who have tested the material, which appears likely to come much more largely into use than heretofore.

THE ECLIPSE ROCK-DRILL AND RELIANCE AIR-COMPRESSOR.—Messrs. HATHORN and Co. exhibited their well-known patent Eclipse rock-drill and Reliance air-compressor at the Royal Agricultural Show, Kilburn. Both these machines are now doing highly satisfactory work at the new Eddystone Lighthouse, and were in operation on the 21st of last month before their Royal Highnesses the Prince of Wales and the Duke of Edinburgh. The particular type of compressor exhibited is specially designed for being driven by either water-wheel or turbine, as also by belt from a portable engine, or to be geared to any other class of engine or counter-shafting. These excellent but simple machines are gaining a wide-spread reputation for their superiority, not only in the United Kingdom but also on the Continent, and exporters will do well to give them their attention. The Hon. Edward Combes, C.M.G., has adopted them for the large railway works in New South Wales, and Messrs. Hathorn and Co. are exhibiting at the Sydney Exhibition. Great credit is due to Messrs. Hathorn and Co. for their great push and enterprise; they being (through their agents, Messrs. Henderson and Son, of Truro) the pioneers in Cornwall in taking the driving of levels at hand-labour prices. They deserve all the encouragement the mining world can bestow on them. We understand that they have executed some good orders for the Cape and Diamond Fields, and have some orders for the Cape railways on hand, as also for India. The machinery exhibited at the Kilburn Show is for a well-known lead mining company in America.

THE IRON TRADE.—The returns of the net average selling prices of iron, obtained from an examination of the employers' books in the North of England iron trade, were presented on Tuesday by Mr. Waterhouse, the accountant. They show that rails, angles, plates, and bars averaged 5*l.* 7s. 7d. for the quarter, as against 5*l.* 14s. 8d. for the previous quarter. There is a lessened production by 18,000 tons as compared with last year. The return is made for the Iron Trade Arbitration Board to regulate wages. The iron rail has nearly died out.

THE AMERICAN IRON TRADE.—The production and prices of iron in the United States have shown some remarkable fluctuations under the present tariff. The effect of protection showed itself soon after the close of the civil war. There was a sudden leap in the production in 1866 to 1,350,343 tons from 931,582 tons in 1865. The quantity produced then rose steadily, until the maximum, 2,868,278 tons, was reached in 1873. After the financial panic the production declined to 2,093,236 tons in 1876, and last year it again rose to 2,577,361 tons. The fluctuations in prices have been still more striking. In 1844 a ton of pig-iron in the States cost $25 75c. In spite of improved methods of smelting, the tariff and a depreciated currency carried the price up to $59 25c. in 1864. In 1873, when the maximum of production was reached, the price was $42 75c. The lowest quotation, $17 62c., was reached last year. A ton of iron rails cost $62 25c. in 1848; $126 in 1864; $76 66c. in 1873; and only $33 75c. last year. How a high tariff makes trade uncertain, speculative, and unhealthful, says the Philadelphia Ledger, is shown thus by its effect on the pet industry of protection.

COLLIERY MANAGERS' CERTIFICATES.—An examination for colliery managers' certificates, under the Coal Mines Regulation Act, 1872, for West Lancashire and North Wales, Mr. Hall's district, was held on June 26 at Wigan. The examiners were Mr. Greenwell; Northumberland; Mr. C. G. Jackson, Wigan; and Mr. Griffiths, North Wales. Eleven candidates presented themselves for examination, and of these four were successful, these being:—Mr. Wm. Crosley, Pemberton Collieries; Mr. J. C. Edge, Ince Hall Collieries; Mr. Wm. Hopwood, Buckley Collieries, Chester; and Mr. F. S. Marsh, Bagnall Collieries, Nottingham.

HOW TO PREVENT EXPLOSIONS IN MINES.—"J. W." writes—The startling discoveries made after the explosion at Blantyre leave no room to doubt that the catastrophe was caused by the foolhardiness of the miners themselves indulging in the pernicious habit of smoking. It would appear that no calamity however great will be a warning, and that rules and precautions can be set at nought by the cunning of those for whose benefit they are designed. Instead of depriving the miner of this questionable luxury, when the attempt is attended with so much danger, would it not be better for the proprietors to provide facilities for its indulgence? It is a well-known fact that gas will not explode unless it comes in contact with flame, and that tobacco does not emit a flame when burned. A coil of orange-coloured cotton yarn hung up at convenient distances in the mine would smoulder away for hours and entail only a very trifling expense. In order to ensure against tampering with the Davy, I would recommend that the lamp instead of being locked should be sealed with an official stamp, and a penalty inflicted when the seal is broken.

REPORT FROM CORNWALL.

July 10.—In the absence of any important material for current comment, we cannot do better than direct special attention to a few of the leading features of Dr. Foster's annual report on the mining of the district, to which allusion has already been made, but by no means at the length which its importance deserves. A careful study of this document would remove many prevalent misconceptions; while a perusal of the detailed list of mines in operation attached, which includes for the first time the number of hands employed at each, will give a better idea of the present position of mining than even an individual return of the produce if standing alone. There have long been a good many mines that are little more than mere names, the wiping out of which, unless the circumstances were fairly understood, and if numbers only were taken into account, would give an utterly false idea of the actual effect indicated upon mining generally. This table of Dr. Foster's now supplies the materials for forming a precise and independent judgment.

Nothing shows the character of the crisis through which we have been passing so clearly and with such force as the tables which indicate the diminution in the number of hands employed. The total number engaged in mining operations for 1878 in Dr. Foster's district was 15,985, of whom 8100 were employed underground and 7824 at surface. This shows a diminution as compared with 1877 of 3997, or about 20 per cent., while in Cornwall alone the falling off was proportionately greater—3656 persons, or 21 per cent. And another fact to be noted in this connection is that the falling off was more largely in the miners proper—those employed underground. Cornwall still had, however, 13,746 at work upon her mines—7084 below and 6662 above; while Devon had but 1599—677 underground and 922 at surface. The number of boys and girls, and of "young persons," employed show a large proportionate reduction to the average of the years before the new regulations, and with them the inspectorship came into force. Thus in Cornwall there were only eight boys under thirteen working underground, and but 393 between 13 and 16, whilst Devon had more of the former class and only 32 of the latter. Then at surface Cornwall employed 339 boys and 69 girls under 13; Devon respectively 17 and 5. Of males, between 13 and 18—"young persons"—there were employed in Cornwall 1431; females, 724. For Devon the figures were respectively 168 and 75. Of females above 18 the Cornish dressing-floors found work for 1394, and the Devon 60. We have not full statistics before us, but we believe these figures will be found to indicate a larger proportionate decrease in the number of females employed than in the total. This, indeed, is no more than must be anticipated as one result of the improved processes of dressing—each more mechanical and automatic than its predecessor—that are gradually finding their way into favour, especially in connection with our tin mines.

When we come to compare the number of hands engaged with the quantity of work actually done, we find that taking it all round less hands appear to have done considerably more work. This of course points mainly in the direction of the employment of improved appliances, and so far as mining proper is concerned may be taken as a significant comment on the valuable results which have followed the introduction of the boring machine in so many directions. Discarding fractions, the chief products of the mines of Cornwall and Devon for 1878, were as follows—Arsenic, 4464 tons; arsenical pyrites, 3638 tons; copper ore, 49,948 tons; iron ore, 4784 tons; lead ore, 1579 tons; manganese ore, 1492 tons; black tin, 13,632 ton; tin ore (whits), 950 tons; tinstuff, 9847 tons; zinc ore (blende), 4277 tons. There were also small quantities of sulphate of barytes, copper precipitate, fluor-spar, iron pyrites, ochre, silver, and silver ore, uranium ore, and wolfram. The share of Devon as the output was, as a rule, very small, she raised a third of the copper, but only 47 tons of black tin, the bulk of the manganese, nearly three-fourths of the iron ore, and a sixth of the lead. Her strongest point was in arsenic, of which she produced 2788 tons, as against Cornwall's 1676 tons, but of arsenical pyrites she had but 679 tons to Cornwall's 2958 tons. However, like Cornwall, Devon has great recuperative power, though it has not hitherto been shown in so marked a manner.

Dr. Foster remarks on these figures as showing in comparison with 1877 a considerable decrease in the production of arsenical pyrites, and of the ores of copper, iron, lead, and silver, but a decided increase in the case of tin. "The increased output of tin ore," to quote his own words, "is marvellous, and affords marked proof of the extraordinary vitality of many of the Cornish tin mines." In 1875, when the average standards were 82s. and 83s. 6d., the quantity of black tin produced by the mines was 12,611 tons. As the standards went down so the quantity rose, from 12,607 tons in 1876, and 13,341 tons in 1877, to 14,220 tons in 1878, when the average standards were 56s. 10d. and 57s. 10d. Again, to quote Dr. Foster's own words, "the continuous drop in the price of tin for the last few years has caused many mines to be abandoned, but the increased output of the larger mines has far more than made up for the deficiencies." Then Carn Brea Mine produced 157 tons of tin ore more than in 1877; Dolcoath, 120 tons; Eliza Consols, 165 tons; South Condurrow, 240 tons; South Wheal Frances, 320 tons; Wheal Peevor, 198 tons; in fact, these six mines alone produced in 1878 1203 tons more than they did in the previous twelve months. The most cursory glance at these figures proves that the mineral resources of Cornwall are in no wise exhausted, *and that this county is not likely to yield up its position as one of the principal tin-producing districts of the world.*"

We italicise the concluding clause of this sentence because it is so well worthy the careful consideration of all who are interested in Cornish mining, and because it endorses on the highest authority the opinions we have again and again expressed in these columns.

We reserve until next week our comments upon that portion of Dr. Foster's report which deals with the accidents of the year, and which contains many valuable practical hints and suggestions; but we may add a few notes with regard to the list of mines in operation which conclude the report. There are 144 mines proper set down for Cornwall, and (excluding clay pits, &c.) 35 for Devon; but of these some were only working for a portion of the year; and, perhaps, we shall not greatly err if we reckon that at the end of 1878 the metalliferous mines actually in operation in Cornwall and Devon numbered somewhere about 160. Of these the operations of the majority were, undoubtedly, on a small scale, but still on a scale that admits of easy expansion with reviving trade and higher prices. Here, then, we have another proof that western mining is by no means so dead as many good people, who are content to let other people do the thinking for them, appear to imagine. The following are the mines which have been returned as employing more than 100 hands:—Dolcoath, 1041; Carn Brea, 719; Devon Great Consols, 591; Phœnix and West Phœnix, 531; West Wheal Basset, 526; Tincroft, 490; Wheal Sisters, 484; Botallack, 409; South Caradon, 399; South Condurrow, 387; West Seton, 372; West Chiverton, 318; East Pool, 309; Levant, 294; Wheal Uny, 281; West Wheal Frances, 275; South Wheal Frances, 267; Wheal Grenville, 237; Marke Valley, 230; Eliza Consols, 234; West Tolgus, 227; Cook's Kitchen, 220; South Wheal Crofty, 202; Wheal Basset, 157; West Godolphin, 159; Glasgow Caradon, 143; Wheal Jane, 150; Wheal Kitty, 183; Penhalls, 183; Goole Pellas, 117; Gunnislake (Clitters), 121; North Levant, 118; North Roskear, 101; St. Austell Consols, 114; Treleigh Wood, 108. With between 75 and 100 hands there were 10 mines, and 16 with between 50 and 75.

IMPORTANT TO PROMOTERS OF MINING COMPANIES.

An exceedingly important case as affecting the position of promoters of mining companies has just been decided by the Vice-Warden of the Stannaries in the matter of the Ambrose Lake liquidation, in which Mr. Clinton, the liquidator, sued Mr. J. Moss and Mr. J. Taylor, directors, under the 165th section of the Companies Act, 1862, the one for 11,450*l.* and the other for 11,410*l.*, by way of compensation for an alleged malfeasance, or breach of trust. The facts as set forth are somewhat complicated. Messrs. Moss and Taylor are the parties principally interested in Ambrose Lake, then a cost-book mine, which in 1871 it was determined to bring out as a limited concern. An arrangement of the concern was accordingly made to William Eaton, a clerk of Taylor's, and by him it was sold to Taylor and George Hardy for 24,000*l.*—*i.e.*, 6000 fully paid up shares of 2*l.* each, and 12,000 shares with 1*l.* paid, the normal capital being 36,000*l.*, in 18,000 shares. Under the Articles of Association the directors were Joshua Moss, Joseph Taylor, George Hardy, Wm. Moss, and John Meginn, Mr. Taylor being managing director. By the directors the agreement to purchase was adopted, and the whole capital of the company placed in the hands of Eaton, who, according to what had had been agreed upon, proceeded to distribute amongst the parties interested in the cost-book mine shares in the limited company, according to their holdings in the old company. Thus on the formation of the company Mr. Joshua Moss was found with 2000 fully paid up 2*l.* shares and 5650 shares with 1*l.* each considered as paid thereon, representing altogether a nominal value of 11,450*l.*; and Mr. Taylor with 2880 fully paid up shares, and 5650 with 1*l.* considered as paid up, the combined nominal value being 11,410*l.* The remaining shares were distributed among the other smaller holders of the cost-book shares in proportion to their several interests. Mr. Moss's interest in the cost-book mine was at the date of its conversion into a limited company 2700 shares, for which he had paid 4625*l.* The value of Mr. Taylor's interest was disputed.

The limited company met with no success, the 12,000*l.* of capital was consumed, and in January, 1878, it was ordered to be wound-up. Nevertheless, it appeared that in January, 1872, and subsequently the mine was thought well of in the market, and that the shares were dealt in to some considerable extent, and were sold at a premium. Mr. Moss retained all his shares, with the exception of 150, which he sold; whilst Mr. Taylor was stated by Mr. Northmore Lawrence to have sold 1650 of his shares, receiving for 983 of them 1963*l.* No doubt, as a matter of fact, both Messrs. Moss and Taylor were large losers. Mr. Moss said that he paid 5500*l.* for calls on the shares retained by him, and Mr. Taylor said that he paid 4500*l.*

Briefly these are the facts as set forth by the official liquidator, who argued in support of his application for an order against Messrs. Moss and Taylor that they were vendors of the property, and their interest was not disclosed, Eaton being held out as the vendor; they were also agents of the company, the purchaser; they initiated the contract and concluded it, and themselves fixed the price which was to be paid. This price the official liquidator said gave them a sum greatly in excess of what their interest in the property had cost them; and this difference was the sum which he claimed for the company. The sum being represented by shares allotted by themselves, considered as fully or partially paid up, he asked the Court to conclude against them that they might have been allotted to their full nominal value by the company by *bona fide* purchasers if they had not been appropriated by Messrs. Moss and Taylor. In answer

to this it was urged that what was called a sale was not in reality a sale at all, but simply a conversion by the owners of the property, through which every share in the new company was exactly to represent the old interest; the company was not damaged, and could not possibly be damaged; the whole property of the old company was bought into the new; the only persons who could possibly complain would be individual shareholders, who might, as against the transferring directors, complain of the excessive nominal value which had been placed upon the shares,

The Vice-Warden, in giving judgment, said he could not agree with this view, which seemed to him to be absolutely inconsistent with the recognition of any obligations on the part of the directors towards the general body of shareholders in the company which they were creating. To them, doubtless, the manner in which the purchase money was apportioned amongst the members of the cost-book company would be a matter of indifference, but the quantum of capital to be distributed amongst them concerned them seriously. It was said that there was not a sale, but a conversion. Let it then be called a conversion, but it was a conversion which gave the directors an interest of greater value than that which they before had, and this at the expense of the company. The authorities were conclusive that, under the circumstances proved, these shares must be treated just as if they were bank notes. There must, therefore, be orders against both these gentlemen. The first point to be considered is whether they are entitled to take credit for the calls which they paid in the limited company. The answer must be in the negative, because he found they have respectively been charged only at the rate of 1*l.* per share in respect of the 5650 shares, on which a liability of 1*l.* remains, and the presumption upon which this judgment proceeds is that these shares, if they had not been appropriated, might have been allotted at par to persons who would have paid the full 2*l.* upon them. Had they been charged with the full 2*l.* per share it would have been different. This being so, the only deduction which can be made is the price which Messrs. Moss and Taylor respectively paid for their interest in the cost-book company. That in Mr. Moss's case is 4625*l.*, leaving a balance of 6825*l.* to be paid by him; and he had no alternative but to make an order against him for the payment of this sum within one month from the date of service, together with the costs of this application. Mr. Taylor's case was not so simple, owing to the extremely confused and unsatisfactory character of the evidence given as to the value of his interest in the cost-book mine. As the result of this troublesome investigation, the Vice-Warden gave him credit to the amount of 1225*l.*, which, being deducted from 11,410*l.*, the amount claimed by the official liquidator, leaves 10,185*l.* to be paid by him.

TRADE OF THE TYNE AND WEAR.

July 10.—The shipments of coal at the Tyne Dock and other points during the past week have been large, and fully up to the average. At Tyne Dock upwards of 90,000 tons have been shipped. The Steam Coal Trade in Northumberland continues fairly prosperous, and most of the works are kept going north of the Tyne. At the collieries near Blyth full time has been the rule of late. Gas coalworks are tolerably busy considering the season. The demand for manufacturing coal is very deficient; this is caused by the general dulness of the iron foundry and engine trades. As might be expected, the brickworks are also very dull, and there is little demand for coal for this and many other manufacturing purposes. As pointed out last week, there are some exceptions to the general depression in the engine and iron trades. At the large old works of Hawks and Co., Gateshead, large orders have been received, and the works are expected to be fully kept going for the remainder of the year. The date of the arbitration in the Durham coal trade has been fixed for July 22, before Lord Derby, as umpire. Although the place for the sitting of the court has not been fixed, it appears probable that it will be held in London. The court is to be held to decide as to the claim of the colliery owners for a reduction of wages. It is probable that another large firm here will shortly enter into the steel manufacture. The question of the production of steel plates has been considered, and if certain experiments now in progress be successful, as seems probable, the manufacture of steel plates for shipbuilding and boiler purposes will be commenced on a scale of some magnitude.

The monthly returns of the Cleveland Ironmasters' Association shows that there are 84 furnaces in blast, 72 being on Cleveland iron and the remaining 12 on hematite and spiegeleisen. The returns show that in the early part of the month the production of iron was affected by the Durham strike, for only 109,433 tons of Cleveland iron were made and 20,422 tons of spiegeleisen. This was much below the ordinary make, though considerably above that of May, when the effects of the Durham strike were very severely felt. There was an increase in the make of all classes of iron of 51,584 tons in June as compared with May. The shipments of iron were very small to foreign ports as compared with May. They show a falling off of nearly 18 000 tons, whilst coastwise for the same period there is an increase of above 7000 tons. There is a net decrease shown in stocks in makers' hands and in store of 5587 tons.

The seventeenth annual delegate meeting in connection with the Northumberland and Durham Miners Permanent Relief Fund was held on Saturday, July 5, in Newcastle. This relief fund was inaugurated in June, 1862, directly after the lamentable accident at Hartley Colliery, and now they have 70,000 members in Northumberland and Durham. Other districts have followed their example in forming relief funds, and now they were to be found all over the country. The secretary read the report, which showed that the income of the society from ordinary members had been about equal to last year, notwithstanding the exceptionally severe depression of trade, especially in Northumberland. The death rate of the society is a little below the average of previous years, and almost the lowest in the kingdom. During the past year one out of every six persons in the society received benefit, and 12,200 persons claimed and received on an average three weeks relief each. The total income was 45,441*l.* 8s. 4d., and expenditure 39,247*l.* 14s. 7d., leaving a balance in favour of the society of 6193*l.* 13s. 9d., which added to last year's balance of 65,638*l.* 18s. 9d. gives a total of 71,832*l.* 12s. 6d. as the capital account of the society. Mr. Hugh Taylor, president of the association, addressed the delegates, congratulating them upon the continued prosperity of the fund.

The annual meeting of the Durham Miners was held, on Saturday, at which about 25,000 men attended. This annual meeting is considered a gala day, and business is also combined with pleasure, as a number of speakers attend, and the position of the miners and also public questions are freely commented upon. Upon this occasion the meeting was addressed by Mr. Crawford, and other officials of the Durham Miners' Union, and also by Mr. Burt, M.P., Mr. Macdonald, Mr.P., Mr. Power, M.P., and others. Mr. Wm. Crawford, secretary of the Association, moved the first resolution, which referred to competition, and in the course of his remarks said that the competition amongst colliery owners resulted in reductions of wages amongst the workmen. The past twelve months had been the darkest they had seen for many years past. During this time, as an organised body, they had had to encounter many difficulties, but one thing pleasing was that, as an organised body, they were stronger than they were twelve months ago. If the owners will go on competing amongst themselves they could do so; they could go on gambling away their wealth and capital, but that they could not be allowed to gamble away the bread of the men, their wives, and families. There were at least 40,000 members on their books, but he asked them during the next twelve months to increase that number, and the time would yet come when the Association would be to each member a blessing indeed. Mr. Macdonald, M.P., also addressed the meeting, and in referring to Dinas Colliery said that gross negligence was the cause of this explosion. It was always said that during the period of the last 27 years the great explosions had been caused by a pipe or the opening of a lamp, or through gross neglect of the workman in some way; he held that in 90 per cent. of the cases the explosion had been caused neither by a pipe or the opening of a lamp. Mr. T. Burt, M.P., said he was greatly opposed to strikes, and desirous of avoiding them, yet he could say that in the late struggle they had right and justice on their side. He was sorry he could not congratulate them upon any improvement in connection with mining or the general industry of the country. A proposition had been put forward lately to stop all pits in the country for a month or six weeks. He did not believe that would help them out of the difficulty. He had every confidence in the future, but whether they had good or bad trade they had a moral, intelligent, and well conducted people. He for one had the fullest confidence in the aspirations and aims of the working people of this country.

The Quarterly Meeting, held at Middlesborough on Tuesday, was very dull in tone, and did not in attendance or business exceed to any material extent an ordinary meeting of the trade. There was a small sprinkling of gentlemen from the Scotch and other iron districts, including Manchester. Enquiry, however, was very slack. The market to-day showed very little variation from last week in respect of prices, which are quoted at—No. 1, 36s. 6d.; No. 3, 32s. 9d. to 33s.; No. 4 forge, 31s. 9d. to 32s. net. Buyers offered 32s. 6d. net for No. 3. The stocks in Connal's warrant stores to-day stood at 79,600, a slight decline on last week. There was a small exhibition of steel from Wolsingham made by Attwood's process—one that has been in operation for a long period. A meeting of the creditors of Messrs. Lloyd and Co. was held. The Messrs. Hayter, of London, who were partners, had handed over their estate, value 29,000*l.*, which will enable the dividend to be increased by 2s. or 2s. 6d. in 1*l.* The returns of stocks of iron for June show a net reduction of 5587 tons, 1689 tons of this being due to makers' stocks, and the remainder to stores. Including the stocks in store and those in makers' hands, there is now a total holding of Cleveland iron of 295,491 tons. Shipments, foreign and coastwise, were 60,800 tons for the month. A large reduction, 17,890 tons, in the foreign deliveries appeared upon May. There are 84 furnaces in blast and 81 out of blast. The effects of the Durham strike were still shown in the returns for June, as the make of iron was between 30,000 and 40,000 tons less than when normal conditions prevailed. The total production of Cleveland iron was 109,433 tons, and of hematite and spiegeleisen 20,422 tons: 25,300 tons of pig-iron were shipped to Scotland from the Tees. To France, where the reports of the iron trade which are received are more encouraging, 5530 tons were forwarded. To Germany less than a-third of the iron sent in May was forwarded in June in consequence of the operation of the duties. The furnaces of Hopkins, Gilkes, and Co. and Lloyd and Co. are being blown out. Those of the former concern will be offered for sale by the trustees, as also the extensive plate and other works, except the engine works, which will be retained for the present and kept at work. Some hopes were entertained of a rally in the Scotch market, seeing the unprecedently low rates which have prevailed, but these expectations have been doomed to disappointment, as the reports give Glasgow prices as lower than ever. The tendency is, consequently, to depress the market in Cleveland. There are, as far as can be seen, no indications of improvement during the summer season.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

July 10.—The Wolverhampton Quarterly Meeting of the iron trade came off on Wednesday. The amount of business which was transacted was not large either as to iron or coal. Consumers mostly postponed their purchases until it was more definitely known what course the majority of the trade would adopt in regard to prices. On Wednesday the previously prevailing rates were redeclared. Thus, cold-blast all-mine pig-iron became 4*l.* 5s. per ton, and hot-blast 3*l.* 5s. These prices were the same as those fixed at the January gatherings. Cinder pigs were procurable at as low as 1*l.* 17s. 6d. per ton. Marked bars were 7*l.* 10s. with 8*l.* 2s. 6d. as Earl Dudley's quotation. It was in September of last year that these prices became the open market rates, when bars, which for over a year had stood at 8*l.* 10s. per ton, were reduced 20s. On Wednesday common bars were to be had at 5*l.* 12s. 6d. per ton. Coal was unchanged at 8s. per ton as the crucial price for furnace sorts, and from 7s. 6d. to 6s. 6d. for forge qualities.

To-day, in Birmingham, the Quarterly Meeting was well attended, but there was a general reluctance to buy. Certain of the largest merchants declared they should not be tempted by a drop of even 30s. in marked bars. All the marked bar firms, therefore, resolved to uphold the prices declared yesterday at Wolverhampton—7*l.* 10s. for bars. Staffordshire pigs also declared unaltered on the quarter, but Northampton pigs were weaker. Several novelties and objects of interest were exhibited in the hall, among them being a working specimen of Neale's secret communicator, which is simply an ordinary pneumatic tube, worked by a foot bellows, for sending written messages from one part of a works or building to another; samples of asbestos rope packing, millboard, felt, &c., which is similar in character to the silica shown here at a former meeting; a new hand printing press—the "Simplissimus"—which is well adapted for circulars, &c.; and plummer blocks, &c, from Messrs. Taylor and Challen's manufactory.

The Tipton committee of the Mines Drainage Commissioners met in Wolverhampton on Wednesday, and resolved that ten pumping engines, which they named, should be worked by the Commissioners as being considered those of most value immediately to the Tipton district, and "for the purpose of establishing a system of levels." The committee was induced to take this important and very gratifying step by the fact that it is calculated that by the 19th inst. 25,000*l.* will be forthcoming as bonds and guarantees, and that there is every probability of colliery owners, to whom some 7000*l.* is due for pumping, consenting to accept bonds in payment. It is hoped that the 16,000*l.* which the Mines Drainage rate in the Tipton district is expected to realise will thus be available for continuing the pumping.

A Court of Arbitrators and Commissioners under the South Staffordshire Mines Drainage Acts was held in Wolverhampton, to hear appeals against a draft award for a mines drainage rate in the Bilston district. The rate is 4½d. per ton on ironstone, 3d. on coal and slack, and 1½d. on fire-clay and limestone. The Patent Shaft and Axle-tree Company (Limited) got a reduction of one-sixth in respect of their Lodge Holes and Old Park Collieries; the Chillington Iron Company (Limited) secured a reduction of one-third; and the Barber's Field Colliery Company (Neachells Hall Colliery) and Messrs. William Ward and Sons (New Priestfield Colliery) each obtained a graduation of their rate to two-thirds. Appeals by Mr. Abraham Hall (Fibbersley Colliery) and by Mr. David Bickley (Spring Bank Colliery) the Court ruled could not be heard, as the requisite notice had not been given; but Mr. Hill obtained a case for a superior court upon the point.

A meeting of ironworkers was held on Tuesday at West Bromwich to consider the existing low rate of wages, and what steps could be taken to remedy the present state of things. Mr. Capper, secretary of the operative section of the Wages Board, addressed the meeting, after which it was resolved to invite representatives from all the works in South Staffordshire and East Worcestershire to attend a conference "to consider the question of an advance in wages, and the better organisation of the ironworkers."

There is good news from Hamstead Colliery. The sinking operations are looking very favourable, and it is expected that in the next few yards the first thin coal seam—the same as that met with at the Sandwell Park Colliery—will be come upon. The rock now being sunk through has been examined by practical geologists in the district, who concur that it exactly corresponds with the rock overlying the same measure of coal on the Sandwell estate. In consequence of the hardness of the formation the sinking cannot be carried on at a rapid rate; still a comparatively short time will, it is believed, be sufficient to reach the coal measures.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

July 10.—I do not understand Mr. Knapp in his letter on "The Llanrwst District." I asked for a few illustrations of a paragraph containing mining advice in his first letter on the Science of Mining, which he has not yet given. I have not attacked him nor subjected these letters to severe criticism; on the contrary, I have read them with much interest. I am sorry, however, that in attacking Mr. Roberts Mr. Knapp indulges in a Quixotic tilt against windmills. As far as I understend his line of argument, it is similar to the problem—given the length of a ship and its width to find the age of the captain. The adoption and utilisation of wind power for mining purposes has throughout the whole of the recent letters on the subject in the Journal been treated as an auxiliary power. I wish we could have from the users of windmills some statistics of work done. I have had occasion to turn over a file of the Journal for 1876 and 1877 lately, and the contrast between the glowing prospects held out for many mines in those years and the present condition of those mines is very marked. I may mention Bodidris, Cambrian, Great Holway, and Llanrwst as examples. These are now said to be hopeful and promising, but much more than this was said at the dates I refer to. Still, better late than never, so let us hope that they are now about to justify a portion at least of what was said about them. Work seems to be going on steadily at most Welsh mines, and the captains are, I have no doubt, doing their best. At Morfa Du the deposit seems to keep its average value, but I should like to see the reports from Parys Mine more decidedly encouraging. They have the merit of being honest, that I think no one can deny, and everybody must wish for the success of the mine.

If to the gloomy reports of trade in this district which I have sent of late we add another shade of darkness and depression we shall bring the accounts up to date.

A very sensible resolution was to have been proposed at the Denbighshire Quarter Sessions at Ruthin last Thursday by Lieut. Colonel Cooke anent the use of traction-engines on roads, but in the absence of this gentleman the consideration of the subject was postponed. The resolution was: "That taking into consideration the depressed state of trade it is not expedient that any restrictions be put on the traffice over the public roads of this county, all such restrictions being antagonistic to the prosperity of the country, depriving the poor of work and their families of food." That is right, Colonel Cooke; better plenty of trade with a threepenny highway rate than no trade with a penny rate. It should be set down as an axiom that "the usual traffic of a district is the whole of the traffic a district can do," and the more the traffic is the merrier for everybody.

One feature in connection with road traffic deserves more notice than it has hitherto received, which is this, next to traction-engines the timber traffic is the heaviest on roads, on most roads it is the heaviest traffic, but the woods supplying the timber, which usually belong to gentlemen assisting to fix the rateable value of property are rated very low indeed, and do not bear anything like their proportionate share of the public burden, and of the cost of maintaining the roads which the carriage of their timber cuts up.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

July 10.—The new East Dock in Fabian's Bay, Swansea, has been already commenced. The opening of the works was quietly performed, but in about a month's time a public demonstration will take place. The Earl of Jersey, who will take part in the proceedings, is now on the Continent, and this is why the public inauguration has been postponed. The Iron Trade has not shown any improvement during the last few days. The quantity cleared, however, has been somewhat augmented, the principal shipments being to New York (1500 tons) and Cagliari. A good many small parcels have been sent away. The orders in hand are mostly of small account; in fact, a number of hands are said to have been paid off at Blaenavon. The steel industry continues to show tolerable briskness. The make of Bessemer rails is large, but the lowness of prices tends to cause masters to hesitate in accepting orders, for quotations are sunk to a very low ebb indeed. The enquiry for iron bars is limited, and altogether trade is as depressed as ever. Prices for Tin-Plates seem rather easier. A meeting of manufacturers has been held at Swansea. The masters seem averse to reducing wages, and the matter was referred to a committee. A possibility exists that the make may be further restricted. The men are now generally employed four days a week.

Though matters are not yet settled between masters and men in all cases in the Coal Trade, about two-thirds of the associated masters' pits are probably employed. The colliers seem generally desirous to resume work, but they are impeded by the conduct of the daymen and hauliers. The Rhondda Valley seems to be the centre of much of the dispute. A meeting of steam coal colliers has been held here, at which they professed themselves ready to work at the reduction on the masters coming to terms with the daymen and hauliers. The latter decidedly refuse to give in. But the question arises—Why should not the colliers in turn take the place of these determined strikers, who would soon give way to the majority? Of course the hauliers are only in very small proportion to the other employees, and why should they "rule the roast?" A feeling of this sort seems to be growing among the men. At the meeting in question a resolution in favour of forming a Union in connection with the National one was carried. At one or two of the collieries the horses have been brought to the surface, and this looks ominous. The coal trade has, of course, been interfered with by the state of affairs, and shipments have to some extent fallen off. The demand for steam qualities is fairly good, however, and when the pits are going as usual (which will, no doubt, shortly be the case), then the quantity cleared will resume its wonted proportions. House qualities sell at late rates, but are not so brisk. Patent fuel is, as usual, rather dull.

Mr. Frankly Hilton, C.E., for the last five years has held the post of designing engineer to the Ebbw Vale Steel, Iron, and Coal Company. Circumstances rendered necessary his retirement from a post the duties of which he discharged with such credit to himself and satisfaction to the company. His many friends and admirers will be pleased to learn that he has secured the responsible post of mechanical engineer to the Rhymney Company's works. Deeply as all regret Mr. Hilton's departure from this valley, everyone will heartily congratulate him on his present appointment.

At Coleford Police-court, before Sir James Campbell, Bart., George Oldland, proprietor of the Hopewell Colliery, near Parkend, was summoned by Thomas Cadman, Inspector of Mines, first, under the 20th general rule, for neglecting to provide sufficient cover overhead when lowering or raising persons in the shaft; secondly, for violating the 23rd general rule, by neglecting to provide a brake or indicator showing to the person working the machine the position of the cage in the shaft; and thirdly, under the 24th rule, for neglecting in every flywheel, exposed and dangerous parts of the machinery, to have the same securely fenced. Mr. Cadman was called in support of the prosecution. It appeared that he had visited defendant's colliery several times before these proceedings were instituted. Defendant now told the Bench that he had sublet the colliery, and that this was done previously to the institution of the charges. Some correspondence was read by Mr. Carter, when the Bench convicted defendant in penalties of 2*l.* under each charge, the full penalties being 80*l.* Oldland appealed to the justices, who made a further mitigation to 3*l.*

REPORT FROM DERBYSHIRE AND YORKSHIRE.

July 10.—Lead mining in the Peak and other parts of Derbyshire is in anything but a flourishing state, for the quantity raised is by no means large, whilst the price obtained does not leave much if anything for owners. The men receive but moderate wages, yet some of those who have mines find some difficulty in making both ends meet, so that there appears to be nothing for many of them but a reduction of the royalty if they are to carry on operations. Coal mining has long flourished when lead mining has been depressed, but this cannot be said to be the case at present, for a large number of miners are now walking about, several pits having been entirely closed, as the owners of them have not been able to work them without incurring a loss. In the neighbourhood of Unstone there appears to be the least doing, but it is probable that at least one of the collieries might be re-opened were the men to make a reasonable concession. Unless they do this none of the pits are likely to be opened just at present, whilst there is not sufficient work for the men employed at those in operation. At several places the men are not working more than three or four days a week, and it cannot be said how long such time will last, seeing that the demand for coal is declining, and prices also drooping, owing to the active competition that is going on in the trade. Of late there has been a marked falling off in the tonnage of coal sent from the leading collieries in Derbyshire to the Metropolis. The returns for June show that in some instances there was a falling off of fully one-third compared with the quantity forwarded in May. This, of course, principally relates to house coal, so that a still further decline may be looked forward to, for as yet there has been little or no actual summer, and fires have been kept going much the same as in the autumn. There has been no material improvement with respect to steam coal, and the business done in it so far has been less than usual for the time of year. The iron trade in most parts of Derbyshire is still quiet, and the make of pig for some time has been kept down, but still at some of the works considerable stocks are to be seen. In finished iron the output is still moderate, but at one or two foundries there is a fair production of water and g s pipes.

In Sheffield business appears to be getting worse than it was, and quite recently a good many men have been put on short time, whilst not a few are altogether idle. The heavy branches are perhaps doing the least, but several of the lighter and oldest ones are also quiet. Armour plates are still being turned out, but for the completion of a vessel partly plated; but there is every reason to believe that before long the composite plates (iron and steel) will be perfected to the satisfaction of the Admiralty, and that a new era in connection with armour-clad vessels of war will commence—of course, greatly to the advantage of Sheffield. In sheets and ship and boiler plates a moderate business continues to be done at several of the works, whilst at some of them the men are still but partially employed. Makers of Bessemer continue to be fairly employed, for a considerable quantity of that material is used for other purposes than the rolling of rails—of course, being cheaper than cast-steel. Makers of Bessemer rails, however, appear to be going

along very well, although it is said but few orders of any extent have been recently received in the town. Cast-steel wheels are being actively pushed, and were trade better there is no doubt a good business would be done in them, seeing that they are well suited for colliery works, and owing to their durability more economical than those made of iron. In general cutlery business is still slack, even in the old-established houses, whilst engineers and machinists are still poorly off. For light agricultural implements and sheep shears for Australia and South America some orders have come to hand, and a little more is also being done in edge tools; on the whole, however, trade may be characterised as bad.

The Coal Trade of South Yorkshire is still in a most unsatisfactory state, some 1100 or 1200 miners being entirely idle, whilst the probability is that the number will be increased before long. In house coal the demand has greatly declined, whilst prices have fallen to a point that certainly does not justify the colliery owners in carrying on as they are at present. Many of them state that they are losing money, and that the probability is that prices of house coal are likely to come down still lower, so that they will be placed in even a worse position than they are now in. The wages question is just now dormant, and the leaders of the miners are seeking to obtain a reduction in the railway rate to London and the Humber ports. The present rate to the Metropolis is much higher by the Great Northern from South Yorkshire than by the Midland from Derbyshire, and the consequence is that by the latter line twice the quantity of coal goes as there does from the former.

On Monday next the Stephenson Memorial Hall, at Chesterfield, is to be opened by the Duke of Devonshire with all due formality. Active preparations have for some time been going on, and the programme extends over nearly the whole of the week, and which includes lectures in connection with mining, the electric light, &c. The opening, however, will take place with a debt of about 5000*l.* on the building, and it remains to be seen whether the week's proceedings will result in its reduction.

TO MR. JEREMIAH THOMAS.

I, JOSEPH PARSONS BIDDLE, of MERTHYR TYDFIL, in the county of Glamorgan, Iron Founder, do hereby admit and acknowledge that I have INFRINGED upon your PATENT for the CONSTRUCTION of a SMALL COAL WEIGHING MACHINE, technically known as "Billy Fair Play," and hereby express my regret, and apologise to you for so doing, and also consent and agree that you are at liberty to publish this APOLOGY in such manner, in such papers, and for such period as you may think proper. JOSEPH P. BIDDLE.

GLASGOW, AND THE HIGHLANDS.

ROYAL ROUTE VIA CRINAN AND CALEDONIAN CANALS by the Royal Mail new steamer "COLUMBA," or the "IONA," from GLASGOW BRIDGE WHARF DAILY at Seven A.M., and from GREENOCK at Nine A.M., conveying passengers for OBAN, NORTH and WEST HIGHLANDS. Official Guide Book, 2d. Bill, with map and tourist fares, free, at Messrs. CHATTO and WINDUS, Publishers, 74, Piccadilly, London; or by post from the Owner, DAVID MACBRAYNE, 119, Hope-street, Glasgow.

IMPORTANT TO SULPHURIC ACID MANUFACTURERS.—NORRINGTON'S PATENT.

In the ordinary method of manufacture, at the time of charging the kilns, a considerable escape of gases takes place, attended with proportionate loss of sulphur, and with much inconvenience to the workmen, as well as annoyance to the vicinity of the works, all of which may be ENTIRELY AVOIDED by the adoption of C. NORRINGTON'S PATENTED INVENTION, which can be applied at moderate cost to existing Plant, as well as in the erection of new Works.

It may be seen in full operation on extensive plant at Messrs. C. NORRINGTON AND CO.'S CHEMICAL AND MANURE WORKS, CATTEDOWN, PLYMOUTH, where the fullest information may be obtained, with terms for licenses.

PORTABLE FORGE AND BLOWER.

AMERICAN NOVELTY—TOO LATE FOR THE SHOW—HUNDREDS SELLING.

Proposals for Purchase, or Licenses of British Patent, received by LAWRENCE AND CO., ENGINEERS, at their Works, LATIMER ROAD, NOTTING HILL, where it can be seen in operation; or to HERBERT AND CO., Patent Agents, 67, STRAND, LONDON.

J. S. MERRY,
ASSAYER AND ANALYTICAL CHEMIST,
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F. M. F. CAZIN,
MINING AND CIVIL ENGINEER,
At BERNALLILLO, NEW MEXICO, U.S. OF AMERICA,

Has 24 years' experience in Mining and Smelting, and 10 years' experience in American Business and Law, offers his services at moderate charges for Reporting on Mining and other Property in any of the above-named States or Territories; gives correct, safe, and responsible advice as to securing full titles and possession; and, as to best mode of utilising the property, will assist in settling existing difficulties by compromise, and in disposing of developed mining property when held at real value; offers his assistance for securing undeveloped mining properties at home prices. As to care taken in reporting, reference is made to the *Mining Journal* Supplement, April 1, 1876, containing report on property of the Maxwell Land Grant and Railway Company; as to technical standing, to the prominent men of the trade—compare *Mining Journal* of Aug. 30 and Nov. 31, 1872, and *New York Engineer and Mining Journal*, Feb. 28, 1874.

£2000 SECURE ONE QUARTER INTEREST IN A PAYING COPPER MINING and SMELTING BUSINESS.

The UNDERSIGNED has succeeded in securing the right of working, and an interest in, a COPPER MINE, which by actual development and test has proved capable of an almost unlimited production of ore, containing in the great average more than 10 per cent. copper. He has ready on the ground 1000 tons of ore, a good steam-engine and boiler, a good blower, 7000 bushel of charcoal, and all the material requisite for the construction of furnaces, and a good house to live in. Has a coal mine of his own at eight miles distance, and the right for timber on a large tract of land, and can turn out copper in less than a month, at a cost of $150 per ton, including freight to New York. But he desires, for two good reasons, a PARTNER:—

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2.—He needs the £2000 in part to pay therewith a balance on his interest, so as to begin clear of debt, and in part as working capital to stock the sale-store with.

Mr. R. MIDDLETON, of this Journal, will on personal application give some more particulars, and is also authorised to select among applicants.

No technical education is required, but a gentleman of commercial ability would be preferred. No time should be lost in making application, as the selection will be telegraphed within a few days. F. M. F. CAZIN,
Mining and Civil Engineer.

Copperfield, near Bernalillo, New Mexico, U.S.A.

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REFERENCES:

Wm. Lane Booker, Esq., H. B. Majesty's Consul, S. F.; the Honorable Leland Stanford, Ex-Governor of California and President of the Central Pacific Railroad, S. F.; the Right Rev. Wm. Ingraham Kip, D.D., LL.D., Bishop of California; the Rev. William Vaux, Senior Chaplain U.S.A., Santa Cruz, Cal.; the Anglo-Californian Bank, San Francisco, California; the Anglo-Californian Bank, No. 3, Angel-court, Throgmorton-street, London, E.C.

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The following few testimonials, out of hundreds in Mr. Hopton's possession, speak to the value of the work:—

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London: MINING JOURNAL Office, 26, Fleet-street, E.C., and to be had of all booksellers.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the WEST ROSKEAR MINING COMPANY.—By an Order, made by His Honor the Vice-Warden of the Stannaries, in the said Matter, dated the 8th day of July instant, on the petition of William Harvey, Henry Whitford, William West, William John Rawlings, William Husband, Francis Harvey, and Nicholas James West, carrying on business as General Merchants, at Hayle, within the said Stannaries, under the style of "Harvey and Co.," and also at Camborne, within the said Stannaries, under the style of "The Camborne Trading Company," claiming to be creditors of the said company, IT WAS ORDERED that the said WEST ROSKEAR MINING COMPANY should be WOUND UP by this Court under the provisions of the Companies Act, 1862.

HODGE, HOCKIN, AND MARRACK, Truro.
(Solicitors for the said Petitioners.)

Dated Truro, 10th July, 1879.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the WEST ROSKEAR MINING COMPANY.—The Vice-Warden has, by an Order made in the above Matter, bearing date the 10th day of July instant, APPOINTED CHARLES WILLIAM CLINTON, of Truro, within the said Stannaries, an Officer of the said Court, to be absolutely the OFFICIAL LIQUIDATOR of the above-named company.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, July 10th, 1879.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the WEST ROSKEAR MINING COMPANY.—Notice is hereby given, that ALL CREDITORS of the above named company are required, on or before the 19th day of July instant, to SEND IN their NAMES and ADDRESSES, and the AMOUNTS and PARTICULARS of their SEVERAL CLAIMS, to CHARLES WILLIAM CLINTON, the Official Liquidator of the said company, at the Stannaries Court Office, in Truro, within the said Stannaries.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, July 10th, 1879.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the EAST WHEAL BASSET MINING COMPANY.—By direction of His Honor the Vice-Warden, notice is hereby given, that on Wednesday, the 23rd day of July instant, at the Registrar's Office, at Truro, in the county of Cornwall, at Eleven o'clock in the forenoon, this Court will proceed to MAKE a CALL of £4 5s. per share on all the contributories of the said company, settled on the List of Contributories as present members thereof.

All persons interested therein are entitled to attend at the time and place aforesaid to offer objections to such call.

JOHN HENRY HAMLEY, Official Liquidator.

Dated Stannaries Court Office, Truro, July 10th, 1879.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the BOSWORGEY MINING COMPANY.—By direction of His Honor the Vice-Warden, notice is hereby given, that on Monday, the 21st day of July instant, at the Registrar's Office, at Truro, in the county of Cornwall, at Eleven o'clock in the forenoon, this Court will proceed to MAKE a CALL of £2 2s. 6d. per share on all the contributories of the said company, settled on the List of Contributories as present members thereof.

All persons interested therein are entitled to attend at the time and place aforesaid to offer objections to such call.

JOHN HENRY HAMLEY, Official Liquidator.

Dated Stannaries Court Office, Truro, July 10th, 1879.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the NEW WHEAL HENDRA MINING COMPANY.—By direction of His Honor the Vice-Warden, notice is hereby given, that on Monday, the 21st day of July instant, at the Registrar's Office, at Truro, in the county of Cornwall, at Twelve o'clock at noon, this Court will proceed to MAKE a CALL of £2 per share on all the contributories of the said company, settled on the List of Contributories as present members thereof.

All persons interested therein are entitled to attend at the time and place aforesaid to offer objections to such call.

JOHN HENRY HAMLEY, Official Liquidator.

Dated Stannaries Court Office, Truro, July 10th, 1879.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the NEW WHEAL TOWAN MINING COMPANY.—By direction of His Honor the Vice-Warden, notice is hereby given, that on Wednesday, the 23rd day of July instant, at the Registrar's Office, at Truro, in the county of Cornwall, at Twelve o'clock at noon, this Court will proceed to MAKE a CALL of £1 2s. 6d. per share on all the contributories of the said company, settled on the List of Contributories as present members thereof.

All persons interested therein are entitled to attend at the time and place aforesaid to offer objections to such call.

JOHN HENRY HAMLEY, Official Liquidator.

Dated Stannaries Court Office, Truro, July 10th, 1879.

WHEAL PRUSSIA, NEAR REDRUTH.

MR. JOHN THOMAS WILL SELL, BY AUCTION, at Tabb's Hotel, Redruth, on Friday, the 18th July, 1879, at Three o'clock in the afternoon precisely, in One Lot, as a going concern, subject to such conditions as will be then read, the WELL-KNOWN and VALUABLE

WHEAL PRUSSIA MINE,

With the ENGINE, and all MATERIALS and EFFECTS thereon.

There is a considerable quantity of ores at surface on the mine, to which the purchaser will be entitled, and the purchaser could at once carry on the operations.

For further particulars of the machinery and materials upon the mine, and any further information, apply to Mr. THOMAS CHIRGWIN, Truro; or to the Auctioneer; or at the offices of DOWNING, PAIGE, and KELLY, Solicitors, Redruth.

Dated Redruth, 10th July, 1879.

CARDIGANSHIRE.

In the parish of Llanbadarn-Fawr, about five miles from Aberystwith, and two miles from Bow Street Station, on the Cambrian Railways.

A HIGHLY DESIRABLE AND COMPACT FREEHOLD ESTATE OF ONE HUNDRED AND THIRTY TWO ACRES,

Comprising an excellent FARM of 109 acres, known as RHOSGOCH, in the occupation of Mr. John Jones; also a small FARM of 17 acres, called GWARCWM, in the occupation of Mr. David Lewis; and the freehold GROUND RENTS and REVERSIONARY INTEREST in ELEVEN LEASEHOLD COTTAGES.

MR. G. T. SMITH is instructed to SELL, BY PUBLIC AUCTION, at the Belle Vue Hotel, Aberystwith, on Wednesday, the 27th day of August, 1879, at Three o'clock in the afternoon, the above property, which is bounded by the estates of Sir Pryse Pryse, Bart.; the Trustees of the late T. O. Morgan, Esq.; J. W. S. Bensall, Esq.; and others.

It will first be offered in One Lot, and, if not so sold, the two farms will be put up together, and each leasehold separately.

The property is in the immediate neighbourhood of Bronfloyd and other mines, and valuable deposits of lead ore are believed to lie underneath the estate.

Plan and particulars, with conditions of sale, will shortly be ready, and may be obtained from Messrs. TALBOT and WOOSNAM, Solicitors, Newtown; EVAN POWELL, Land Agent, Llanidloes; or from the Auctioneer, Aberystwith

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VERY VALUABLE LANDS AND MINERAL PROPERTY AT REDRUTH AND CAMBORNE, CORNWALL, FOR SALE.

TO BE SOLD, BY AUCTION, at Tabb's Hotel, Redruth, on 1st August, 1879, at Four P.M., subject to the conditions then read, ONE UNDIVIDED THIRTIETH PART of the ENTIRE MANOR of TRELEIGH and LANDS of TRENGWITH and NANCE'S LANDS, situate in the parish of Redruth, and the like part of LANDS called BOLINA, in Camborne, and also the like part of the MINERALS throughout the entire Treleigh Manor and Trengwith, Nance's, and Bolina lands.

West Peevor, Treleigh Wood, Wheal Aunger, East Tolgus, Treleigh Consols, Wheal Mary, Wheal Catherine, Wheal Harmony, Wheal Montague, Wheal Diamond, and part of Wheal Prussia are situate in Treleigh, many of which mines are considered most valuable, and some of the tin lodes running through the Manor are supposed to be among the best in the county.

All further particulars may be obtained of—

DOWNING, PAIGE, and KELLY, Solicitors, Redruth.

Dated Redruth, July 1st, 1879.

TO BE SOLD (immediately), BY PRIVATE TREATY, AS A GOING CONCERN, a very ELIGIBLE and WELL-ESTABLISHED COLLIERY, called

THE WERN COLLIERY,

Situate close to the London and North-Western Railway at BAGILLT, in FLINTSHIRE. The colliery is capable of great extension, and offers a field for a very advantageous employment of capital.

Further particulars and orders to view may be obtained by applying to Messrs. PARRY, JONES, and SON, Solicitors, Denbigh; or to J. F. DAVIES, Wern Colliery, Bagillt, Flintshire.

LEAD MINE, OPEN TO VIEW, PURE, AND COMBINED with LIMESTONE and SPAR.

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FOR SALE,—GRANITE SETT WORKS, near the town of NEVIN, CARNARVONSHIRE, near the sea, and convenient for loading. The price is moderate—the estate is freehold, and covers nearly twenty-six acres. Or would be LET ON LEASE to a desirable tenant. This is a *bona fide* speculation. Also,

FOR SALE, the LEASEHOLD INTEREST, with possession, of SLATE and SLAB QUARRIES in NORTH WALES, and now in full working order. Undeniable investment. Price £12,000.

Full particulars of the properties, or either of them, on application to Mr. BOND, Land Surveyor, 7, Castle-street, Liverpool.

COLLIERY PLANT.
HOWARD'S WEST HARTLEY COLLIERY, NETHERTON, NEAR MORPETH, NORTHUMBERLAND.

FOR SALE, the PLANT, &c., of the above COLLIERY, consisting of—300 tons 75 lbs. D.H. IRON and STEEL RAILS, with CHAIRS, FISH-PLATES, POINTS, and CROSSINGS; 300 tons 18 lbs. BRIDGE and 28 lbs. EDGE RAILS; 400 CHALDRON WAGONS, wheels W.I. tyres; WINDING, PUMPING, and HAULING ENGINES; HORIZONTAL ENGINE, 15 in. cylinder; GUIBAL FAN; sets of 16 in., 17 in., and 19 in. PUMPS, complete; 3 in., 5 in., 8 in. FLANGE and SOCKET PIPES; FOUR LOCOMOTIVE ENGINES; SIXTEEN BOILERS, double flue and egg-ended cylinder; COAL TUBS; STONE TIP WAGONS; 16 in. LATHE, and usual MATERIAL about a Colliery.

Apply to WEAR and COLLEY, 32, Broad Chare, Newcastle-upon-Tyne.

FOR SALE,—An ANTHRACITE COLLIERY, in the GWENDRAETH VALLEY, CARMARTHENSHIRE.

The area is about 500 acres, and the sleeping rent moderate. The colliery has been at work a few years only, and the PUMPING ENGINES, WINDING GEAR, and PLANT are in good condition, and sufficient to work a large quantity of coal.

It is situate on and connected by sidings with the Gwendraeth Valley Railway, which joins the Great Western Railway at Pembrey, Burry Port.

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FOR SALE, to close account, TWO VERY VALUABLE SETTS, having well known lodes of COPPER and TIN running through them for a great distance, and situated in an established locality. Ores of high percentage have been sold from these properties for many years, the working of late having been in private hands.

On the tin portion of the property there are large water wheel, dressing gear, and floors, trams, and a variety of mining appliances and erections.

WILL BE SOLD A BARGAIN.

Address to "T. B.," Victoria and Albert Hotel, Torquay, Devon.

FOR SALE, a NEW 70 inch cylinder CORNISH BEAM PUMPING ENGINE, 10 ft. stroke in cylinder and 9 ft. in the shaft, with steam case, metallic piston, and wrought gudgeon. The false cover, perpendicular pipes, weigh posts, working and nozzle gear all fitted bright. A strong substantial well made engine, complete, including cast-iron casings for top and bottom nozzles with bright covers, holding down bolts and wrought-iron caps and bolts for connection to main rod.

Apply to WILLIAMS'S PERRAN FOUNDRY COMPANY, Perranarworthal, Cornwall. Dated Jan. 29, 1879

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18 H.P. PORTABLE STEAM ENGINE, with link motion reversing gear, ready for delivery; also gear to wind and pump.

A 9-h.p. VERTICAL STEAM ENGINE, with link motion, reversing gear (winding drum if required).

A 6-ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER, with carriage and travelling wheels.

Apply to—

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22 IN. AIR COMPRESSOR, on massive bed-plate, with slide bars, connecting rods, and crank, FOR SALE (CHEAP).

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Also PAIR OF 9 inch WINDING ENGINES complete, with 4 feet drum, geared 3 to 1. Apply to—

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HORIZONTAL ENGINE, 15-horse power, strong, and well finished, with fly-wheel, wrought crank shaft 5 in. diameter, and massive box bed; suitable for winding or general purposes; quite new. Price £70.

HORIZONTAL ENGINE, 8 in. cylinder, beautiful and most improved design, new and complete, with pump and governor. £38.

ALEXANDER SMITH
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BICKFORD'S PATENT SAFETY FUSE
FOR CONVEYING FIRE TO THE
CHARGE IN BLASTING ROCKS &c

Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at the "INTERNATIONAL EXHIBITION" of 1862 and 1874, in London; at the IMPERIAL EXPOSITION," held in Paris, in 1855; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXPOSITION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Altona, in 1869; TWO MEDALS at the "UNIVERSAL EXHIBITION," Vienna in 1873; and at the "EXPOSICION NACIONAL ARGENTINA," Cordova, South America, 1872.

BICKFORD, SMITH AND CO., of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN-STREET, LIVERPOOL; and 85, GRACECHURCH-STREET, LONDON, E.C., MANUFACTURERS AND ORIGINAL PATENTEES of SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—

EVERY COIL of FUSE MANUFACTURED by them has TWO SEPARATE THREADS PASSING THROUGH the COLUMN of GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM SUCH TWO SEPARATE THREADS as THEIR TRADE MARK.

BENNETTS' SAFETY FUSE WORKS
ROSKEAR, CAMBORNE, CORNWALL.

BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES,

Suitable for wet or dry ground, and effective in Tropical or Polar Climates.

W. BENNETTS, having had many years experience as chief engineer with Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety of its own manufacture, of best quality, and at moderate prices.

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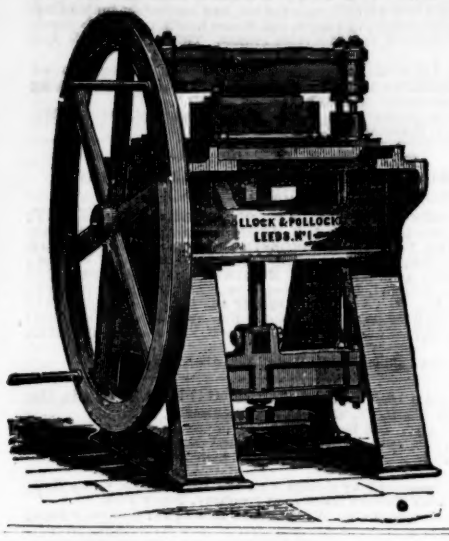

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In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (7½ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

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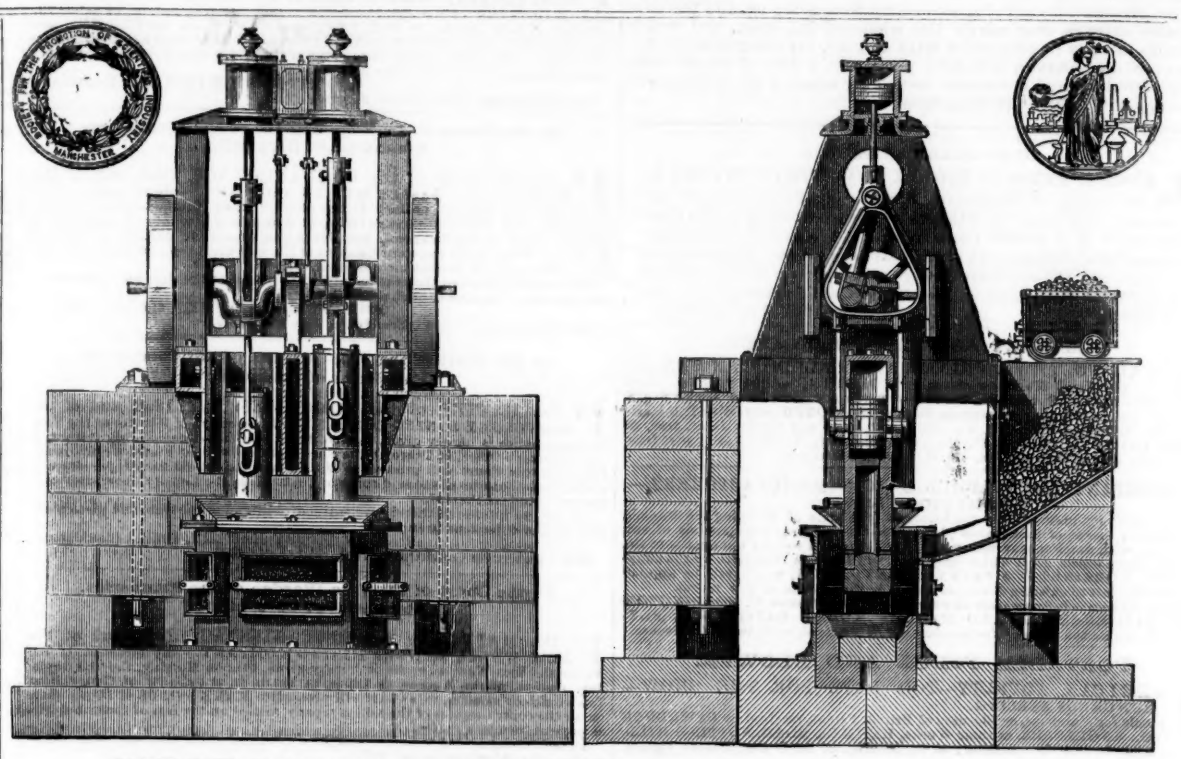

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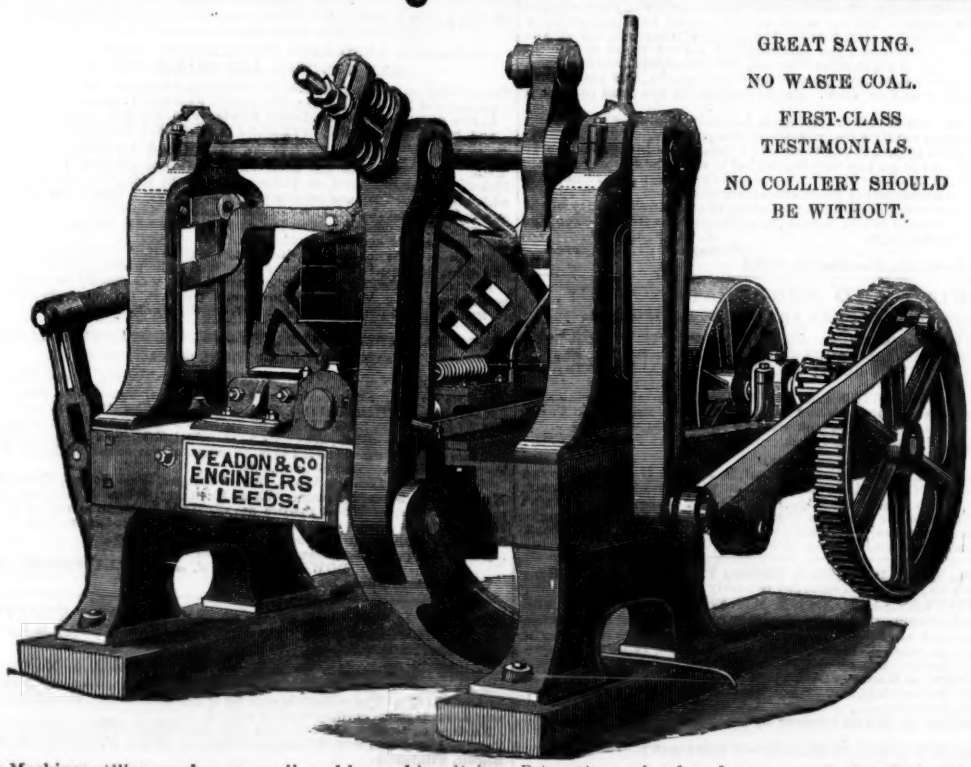

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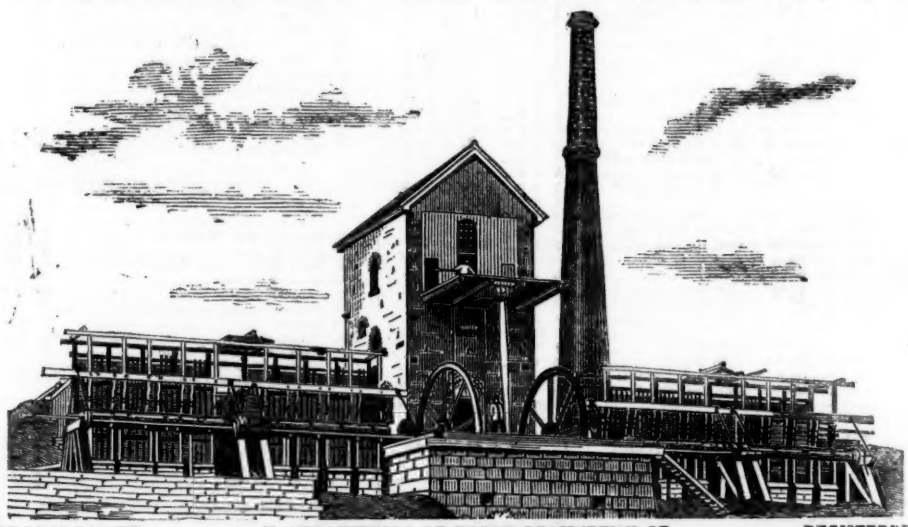

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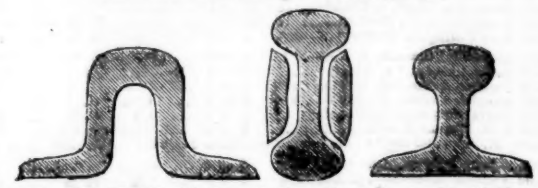

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Shares.		Paid.	Last wk.	Clos pr.	Total divs.	Per sh.	Last pd.
3000	Bryn Alyn,* *l*, Denbigh	10 0 0	—	—	0 7 0	0 7 0	Jan. 1877
10000	Caron, *l*, Cardigan*	2 0 0	2½	2 2¼	0 4 0	0 2 0	Oct. 1878
1000	Carn Brea, *c, t*, Illogan†	55 7 6	26	23 25	308 0 0	1 0 0	Feb. 1874
400	Cashwell, *l*, Cumberland*	1 10 0	—	—	1 9 6	0 2 0	Aug. 1876
2450	Cook's Kitchen, *t*, Illogan†	16 14 9	2¾	1½ 1¾	11 17 0	0 7 6	Jan. 1873
740	Devon Gt. Consols, *c*, Tavistock†	1 0 0	2	1¾ 2	116 15 0	0 5 0	July 1877
4296	Dolcoath, *c, t*, Camborne	10 14 10	26	23 25	113 6 3	0 5 0	May 1879
5000	East Black Craig,* *l*, Scotland*	5 0 0	—	—	0 10 0	0 10 0	Feb. 1877
300	East Darren,* *l*, Cardiganshire	32 0 0	—	—	235 10 0	1 0 0	Aug. 1876
6400	East Pool, *t, c*, Illogan	0 9 9	9½	9 9¼	16 0 3	0 4 0	Apr 1 9
40000	Glasgow Cara., *c** [30,000 £1 p., 10,000 15s. p.]		¾	¼ ¾	0 13 10	0 0 6	Aug 18 8
8500	Gorsedd & Merlyn Cons., *l*, Flint	9 10 0	2½	2 2¼	0 5 0	0 5 0	Aug. 1877
15000	Great Laxey *l*, Isle of Man*	4 0 0	16½	15 16	24 15 0	0 5 0	Apr. 18 9
615	Gt. Retallack, *l, bi*, Perranzabuloe	5 18 8	—	—	0 1 6	0 1 6	May 1877
6400	Green Hurth *l*, Durham*	9 6 0	4¾	4½ 4¼	2 2 0	0 3 0	Mar. 1878
20000	Grogwinion, *l* Cardigan*	2 0 0	3	2½ 3	0 14 10	0 0 10	Aug. 1878
9880	Gunnislake (Clitters), *t c*	5 5 0	1¾	1¼ 1¾	0 13 9	0 1 0	Oct. 1876
2800	Isle of Man, *l*, Isle of Man*†	25 0 0	—	—	82 5 0	0 0 0	Feb. 1879
20000	Leadhills,* *l*, Lanarkshire	6 0 0	2	1¾ 2	0 15 0	0 3 0	Mar. 1878
400	Lisburne,* *l*, Cardiganshire	10 15 0	35	30 35	197 10 0	1 0 0	Mar. 1879
9000	Marke Valley, *c*, Linkinhorne	5 3 6	⅝	½ ⅝	7 15 0	0 2 0	Jan. 1878
10000	Mellanear Copper, Hayle*	2 0 0	3½	3½ 3¾	0 8 0	0 3 0	Feb. 1879
9000	Minera Mining Co., *l*, Wrexham*	5 0 0	10½	9½ 10½	68 1 8	0 2 0	May 1879
20000	Mining Co. of Ireland, *c, t*, & *l**	7 0 0	—	—	23 17 6	0 2 6	Jan. 1878
1024	North Busy, *c*, Chacewater	1 14 0	—	—	1 0 0	0 5 0	Oct. 1878
10289	North Hendre, *l*, Wales	2 10 0	6¼	6 6¼	2 17 6	0 5 0	Apr. 1879
15000	Panty Mwyn,* *l*, Mold (8794 lbs.)	2 0 0	3	2½ 3	0 3 0	0 2 0	Aug. 187
5000	Pennalls, *t*, St. Agnes	3 17 6	1¾	1½ 1¾	3 13 6	0 2 0	July 1878
6000	Pennant, *l, bar*, North Wales*	5 0 0	4½	4 4¾	0 10 0	0 5 0	Mar. 1878
45793	Penstruthal,* *t, c*, Gwennap	2 0 0	3s.	2s. 3s.	0 2 8	0 0 6	Nov. 1878
18000	Prince Patrick,* *l*, Holywel §	1 0 0	1	¾ 1	0 14 0	0 1 3	Jan. 1878
12000	Ditto, pref. (8000 issued)	0 10 0	—	—	0 1 0	0 1 0	Mar. 1879
10000	Red Rock,* *l*, Cardigan	2 0 0	2¾	1¾ 2¼	0 4 0	0 2 0	Jan. 1878
12000	Roman Gravels, *l*, Salop*	1 10 0	8¾	8¼ 8½	8 5 0	0 5 0	May 18 9
512	South Caradon, *c*, St. Cleer	1 5 0	50	45 50	744 10 0	1 0 0	Nov. 1878
6123	South Condurrow, *t, c*, Camborne]	6 5 6	13	11½ 12	5 7 0	0 10 0	Apr. 1879
12000	St. Harmon,* *l*, Montgom	3 0 0	2	1 2	0 12 0	0 3 0	July 1878
4500	South Wh. Frances, *t*, Illogan†	7 12 4	8½	6¾ 7¼	38 4 6	0 12 6	Apr. 1879
12000	Tankerville, *l*, Salop*	6 0 0	3	2½ 3	4 17 0	0 5 0	Dec. 1876
6000	Tincroft, *c, t*, Pool, Illogan†	11 10 0	9	7½ 8¼	50 8 6	0 5 0	May 1877
18000	Van, *l*, Llanidloes*	4 5 0	17	15 16	24 0 6	0 5 0	July 1879
3000	W. Chiverton, *l*, Perranzabuloe§	17 5 0	2½	2 2½	55 10 0	0 10 0	Feb. 1878
1783	West Poldice, St. Day§	1 0 0	—	—	1 19 0	0 4 0	July 1876
512	West Tolgus, *c*, Redruth	95 10 0	21	18 20	33 0 0	1 0 0	Jan. 1879
2048	West Wheal Frances, *t*, Illogan§	29 6 3	5	4 4½	3 12 6	0 5 0	Oct. 1878
600	West Wh. Seton, *c*, Camborne†§	49 0 0	13	11 13	446 0 0	0 15 0	Apr. 1878
12000	West WyeValley,* *l*, Montgom	3 0 0	1½	1 1¼	0 12 0	0 3 0	Nov. 1877
1024	Wh. Eliza Consols *t*, St. Austell	18 0 0	—	—	19 10 0	1 10 0	Aug. 1878
2048	Wheal Jane, *t*, Kea§	5 13 10	1½	1¼ 1¾	8 5 0	0 5 0	July 1878
4295	Wheal Kitty, *t*, St. Agnes	5 4 6	¾	¾ ⅞	11 19 6	0 2 6	Dec. 1874
80	Wheal Owles, *t*, St. Just§	173 15 0	—	—	522 10 0	4 0 0	Aug. 1872
3000	Wheal Peevor, *t*, Redruth	7 11 0	9½	8¾ 9	1 12 6	0 10 0	July 1879
6000	Wheal Prussia, *t*, Redruth	0 5 0	—	—	0 4 0	0 1 0	July 1877
10000	Wye Valley, *l*, Montgomery*	3 0 0	1¾	1¼ 1¾	0 10 6	0 4 6	Oct. 1876

FOREIGN DIVIDEND MINES.

35500	Alamillos, *l*, Spain*†	2 0 0	1¾	¾ 1¾	1 19 9	0 0 6	Oct. 1878
40000	Almada and Tirito Consol., *c*†	1 0 0	⅜	⅜ ⅜	0 6 3	0 1 0	May 1876
20000	Australian, *c*, South Australia†	1 7 6	1¾	¾ 1¾	1 1 6	0 2 0	July 1878
10000	Battle Mountain,* *c*, (6240 part pd.)	5 0 0	—	—	0 10 0	0 10 0	Nov. 1872
18000	Birdseye Creek, *g*, California*	4 0 0	⅝	⅜ ⅝	0 14 0	0 2 6	June 1874
20000	Cape Copper Mining,*† So. Africa	7 0 0	28½xd	27½ 28½	33 15 6	0 12 6	June 1879
34433	Cedar Creek, *g*, California*	5 0 0	—	—	0 5 0	0 2 6	June 1873
35000	Cesena Sul. Co., Romanga, Italy*	10 0 0	—	—	0 16 0	0 2 0	Aug. 1878
18000	Chicago, *s*, Utah*	10 0 0	⅜	⅜ ⅝	2 8 0	0 4 0	Nov. 1876
68000	Colorado United, *s-l*, Colorado*†	5 0 0	1¾	1½ 1¾	0 13 6	0 4 0	Jan. 1875
10000	Copiapo, *c*, Chili* (£20 shares)	16 15 0	—	—	7 11 5	0 3 0	May 1877
100300	Don Pedro North del Rey*†	1 0 0	1	¾ 1	2 5 9	0 2 0	Mar. 1872
23500	Eberhardt & Aurora, *s*, Nevada*†	10 0 0	2¾	2½ 2¾	1 8 0	0 3 0	Dec. 1877
70000	English & Australian, *c*† S. Aust.	2 10 0	1½	1¼ 1⅜	2 16 9	0 1 0	Mar. 1878
30800	Flagstaff, *s*, Utah*	10 0 0	⅝	½ ⅝	4 2 0	0 5 0	July 1878
98000	Fortuna, *l*, Spain*†	2 0 0	3¾	3½ 4	7 4 11	0 1 9	Apr. 1879
53000	Frontino & Bolivia, *g*, New Gran.*†	2 0 0	2¾	2 2¼	0 3 6	0 1 0	Feb. 1879
30000	Gold Run, *hyd.*	1 0 0	—	—	0 2 4	0 0 4	Oct. 1872
100000	Hercules and Roe, *s*, Colo., fy. pd.	2 0 0	—	—	2 8 0	2 8 0	Jan. 1876
68 800	Kapunda Mining Co. Australia†	1 3 0	—	—	0 2 4	0 0 6	June 1873
30000	Last Chance, *s*,* Utah	5 0 0	—	—	0 14 0	0 2 0	July 1873
18000	Linares, *l*, Spain*†	3 0 0	3¾	3½ 4	17 12 10	0 2 6	Apr. 1879
65000	London and California, *g*†*	2 0 0	¾	⅜ ¾	0 1 0	0 1 0	July 1876
5000	Mamm. Copperopolis of Utah, *s*, *	10 0 0	—	—	0 5 0	0 5 0	Dec. 1872
5000	Mountain Chief, *s*, Utah*	10 0 0	—	—	0 4 0	0 4 0	Jan. 1873
10000	Pontgibaud, *s-l*, France†	20 0 0	20	18 20	27 6 9	0 7 6	June 1879
10000	Port Phillip, *g*, Clunes*† (£2 sh.)	1 0 0	⅝	⅜ ⅝	1 12 0	0 1 0	Mar. 1879
54000	Richmond Consols, *s*, Nevada*†	5 0 0	8¾	7¾ 8¼	7 1 6	0 10 0	Feb. 1879
40000	Santa Barbara,* *g*, Brazil	0 10 0	2¼	1¾ 2	0 7 3	0 1 6	May 1879
120000	Scottish Australian Mining Co.*†	1 0 0	2	1¾ 2	15 per cent.		Nov. 1878
80000	Scottish Austral. Mining Co., New	0 10 0	1	¾ 1	15 per cent.		Nov. 1878
22500	Sierra Buttes, *g*, California*†	2 0 0	1¾	2 2¼	235 10 0	1 0 0	Aug. 1876
40625	S. B. Plumas Eureka	2 0 0	2¾	2½ 2¾	2 0 6	0 1 6	Apr. 1879
£250000	St. John del Rey*† (£5 stock & multiples dealt in)		255	265	2 1 0	0 3 0	Oct. 1878
20000	Tolima, *g, s*,* So. America	5 0 0	—	—	⅓ year. 15 p. ct. for Dec. 1878		
28000	Victoria (London)*, *g*, Australia	1 0 0	⅛	⅜ ⅛	0 11 6	0 6 6	May 1874
18000	Western Andes, *s*,* New Granada	5 0 0	—	—	0 13 1½	0 0 7½	June 1879
21000	W. Prussian (3500 pref. sh. 10*l*. pd)	10 0 0	10½	10 10½	0 12 0	0 12 0	July 1876

NON-DIVIDEND FOREIGN MINES.

Acres	Mines.	Paid.	Last Pr.	Clos. Pr.	Last Call.
12000	Argentine, *g*, Argentine Republic	5 0 0	—	—	Fully pd
80000	Blue Tent, *hyd.*, California	5 0 0	2¾	2 2¼	Fully pd.
10000	Buena Ventura,* *l*, Llano de las Infantas, Spain (£2 sh.)	0 10 0	—	—	Fully pd.
15000	Canada,* *g*, Canada	1 0 0	—	—	Mar. 1879
49935	Choutaco, *g, s*, Nicaragua*†	2 0 0	3s.	2 2½	Fully pd.
75000	Colombian Hydraulic, *g*, Colombia	1 0 0	—	1s. 3s.	Fully pd.
18000	Condes of Chili, *s-l*	5 0 0	—	—	Fully pd.
90000	English Australian, *g*, Victoria*	1 0 0	—	—	Fully pd.
35 000	Excelsior Hydraulic Gold Washing Co., California*	6 0 0	—	—	Fully pd.
1 0000	Exchequer, *g, s*, California*†	1 0 0	—	—	Dec. 1871
100000	Frontenac,* *l*, Ontario Canada	1 0 0	¼	⅛ ¼	Fully pd
60000	Holcombe Valley, *g*,* California	1 0 0	—	—	Fully pd.
10 000	Hornachos,* *s-l*, Spain	10 0 0	—	—	Fully pd.
12000	Hultafall,* *l, bi*, Orebro, Sweden	5 0 0	—	—	Fully pd.
12000	Hunter Consolidated, *s-l*, Utah	10 0 0	1¼	1¼ 2	Fully pd.
20000	Imperial Brazilian Collieries, Brazil*	5 0 0	—	—	Fully pd.
7500	Isabelle, *g, s*, California (£20 shares)	5 0 0	—	—	Fully pd.
100000	I. X. L., *g, s*, California*	1 0 0	—	—	Oct. 1878
80000	Javali, *g*, Nicaragua*	2 0 0	¼	⅛ ¼	Fully pu
3500	La Manche, *l*, Newfoundland	10 0 0	5s. 6d.	4s. 6s.	Fully pd.
7587	Lusitanian, Portugal*† (£5 sh.)	10 0 0	—	—	Fully pd.
12000	Menzenberg, *c*, Hounef, Germany*	4 15 0	—	—	Last call, May 1879
9000	Missouri Lead Mining & Smelting,* U.S., pref. (10*l*. sh).	5 0 0	—	—	Fully pu
4588	New Bensoerg, *t, l*, Germany	4 0 0	5	4½ 5	Allotment
66000	New Quebrada, *c*, Venezuela*	5 0 0	—	—	Nov. 1876
20000	New Zealand Kapanga, *g*, Coromandel*	5 0 0	2½	1¾ 2¼	Fully pd.
100000	Nouveau Monde, *g*, Venezuela (Société en commandite).	5 0 0	—	—	Fully pd.
3000	Oregon,* *g*, Oregon, U.S. (preference shares	1 0 0	⅜	⅛ ⅜	Fully pd.
80000	Panulcillo, *c*, Chili*† (£80000 debentures	4 0 0	—	—	Fully pd.
20000	Pestarena United, *g*, Italy*†	4 0 0	1¼	1 1¼	Fully pd.
25000	Pitanqui,* *g*, Brazil (incl. 6000 sh. £1 fully paid)	3 0 0	¾	½ ¾	Fully pd.
25000	Placerville,* *g q*, California	0 8 6	⅜	⅛ ⅜	April 1879
50000	Providencia and New Rosario, *s*, Mexico*	2 0 0	2¾	2½ 2¾	Fully pd.
40000	Ravenscliff, *g*, New Zealand; *c*, South Australia	1 0 0	—	—	Fully pd.
£2,161,000	Rio Tinto,* *c*, Huelva, Spain	0 5 0	—	—	July 1878
100000	Rosas Grande, *g*, Brazil*† (£1 shares)	Stock	71	69 71	Fully pd.
30040	Russia Copper, Orenburg and Ufa*†	1 0 0	3s.	1s. 3s.	Fully pd.
32000	Sentein,* *s-l, bl*, Ariège, France	10 0 0	—	—	Fully pd.
10000	Silver Plume, *s*, Colorado*	1 0 0	—	—	Fully pd.
80000	Tecoma, *s*, Utah*	1 0 0	—	—	Fully pd.
43174	United Mexican, *s*, Mexico*†‖	10 0 0	—	—	Fully pd.
14000	Utah, *g, s-l*, Utah*	20 2 9	3¾	3 3½	May 1878
60000	Virneberg, *c* Rheinbreitbach, Germany*	5 0 0	—	—	Fully pd.
75000	Yorke Peninsula, *c*, South Australia	3 0 0	—	—	Fully pd.
84500	Yorke Peninsula, *c*, South Australia Preference	1 0 0	4s.	2s. 4s.	Fully pd.
			—	⅜ ⅝	Fully pd.

§ Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

	Closing Prices	
Argentine, 1868 6 per cent.	75¾	76¼
Bolivia, 6 per cent. Bond Com. Certs.	35	36
Brazilian, 1865, 5 per cent.	91	92
Chilian, 1866, 7 per cent.	77	80
City of Providence, 6 p.c. coupon bnds	103	105
Egyptian, Gov. preferences	71¾	72
Do., unified debt, scrip	47¾	47¾
Do., 7 per cent., V.M.L.	76	79
Do., 9 per cent. guar.	79	81
Do., L. Daira Sanieh	56	57

	Closing Prices.	
Foreign and Col. Gov. Trust, 6 p. ct.	68	73
Do., 5 per cent., 2d issue	52	56
Do., 6 per cent., 3d issue	70	74
Do., 1872, 4th issue	66	70
Do., 1873, 5th issue	66	70
Peruvian, 1870, 6 per cent.	113¾	123¾
Do., 1872, 5 per cent.	93¾	103¾
Russian, 5½ per cent. L. Mort.	—	—
Spanish, Quicksilver Mort., 5 p. ct.	99	101
United States Mort., 6 per cent.	104	106

b, blende; bi, lead; c, copper; g, gold; l, lead; s, silver; si, slate; s-l, silver-lead; t, tin; z, zinc.

* Limited Liability Companies; † quoted on the Stock Exchange; ‖ have paid dividends

NON-DIVIDEND MINES.

Acres		Paid.	Last wk.	Clos. pr
40000	Aberdaunant, *l*, Llanidloes*	1 0 0	¼	⅛ ¼
2560	Aberllyn,* *l, bi*, Carnarvon	10 0 0	11	10 11
10000	Aberystwith,* *s-l*, Cardigan	5 0 0	—	—
80	Albion, *t*, Cornwall	100 0 0	—	—
12000	Assheton, *l*, Carnarvonshire*	5 0 0	1	¾ 1
50000	Ballycummisk,* *c*, Schull	2 0 0	—	—
10000	Bedford Unit.,* *c*, Tavist. (1*l*. liab.)	0 1 0	⅜	¼ ⅜
12000	Bell Vean, *t, c*, Gwennap	2 0 0	2	1½ 2
30000	Bettws y-Coed,* *l* (20,000 issued)	1 0 0	1	¾ 1
8000	Blaen Caelan,* *l*, Cardigan	3 0 0	3	2½ 3
3937	Blue Hills, *t, c*, St. Agnes	4 6 6	¾	½ ¾
30000	Bodidris,* *l, bi*, Denbighshire	1 0 0	1¾	1¾ 1¾
1000	Bollihope Vale,* *s-l*, Durham	5 0 0	—	—
200	Botallack, *t, c*, St. Just]	125 15 0	13	12 13
2000	Bowden Hill,* ma	1 0 0	—	—
6000	Bradwell Moss Rake	1 0 0	1	¾ 1
10 00	British,* *s-l*, Wrexham	2 0 0	2	1¼ 2
256	Brownpelly, *c*, St. Neot	0 10 0	1¼	1 1¼
20000	Bwich United,* *l* (1*l*. sh.) Cardigan	0 12 6	1¾	1¼ 1½
50000	Cambrian,* *s-l, c*, Cardiganshire	2 0 0	2	1¾ 2
20000	Central Foxdale, *l*, I. of Man*(2*l*. sh.)	1 5 0	—	—
10000	Central Van,* *l, bi*, Llanidloes	5 0 0	—	—
5120	Clementina, *l*, Llanrwst*	1 0 0	1¾	1 1¼
25000	Coed Mawr Pool,* *l*, Carnarvon	2 0 0	—	—
7500	Combellack,* *t*, Wendron	2 0 0	—	—
6000	Combmartin, *s-l*, North Devon	0 7 0	⅛	⅛ ⅛
6400	Crookburn,* *l*, Cumberland	0 5 0	⅜	⅛ ⅜
140 0	Crosswood Mining Lands, *l*.*	1 0 0	1½	1 1¾
15000	Cwm Brwyno,* *l*, Cardigan	2 0 0	1¾	1¼ 1¾
18000	Cwm Dwyfor,* *c, s-l*, Wales	1 0 0	—	—
5000	Ditto, 12½ per cent. pref.	1 0 0	—	—
3000	Cwmystwith* (New), *l*, Cardiganshi.	5 0 0	—	—
1 80	D'Eresby Cons., *l, bi*, Carnarvon	10 0 0	6	6
1024	D'Eresby Mountain, *l, bi*, Llanrwst.	20 0 0	35	30 35
30000	Denbighshire Consolidated, *l**	3 0 0	1¾	1¼ 1¾
12000	Derwent,* *l*, Durham	4 0 0	⅜	⅛ ⅜
1 000	Dubby Syke, *l*, Durham*	0 15 0	4s.	4s.
6144	East Caradon, *c*, St. Cleer]	3 2 0	⅛	⅜ ⅜
4000	East Chiverton, *l*, Perranzabuloe	7 12 6	1¾	1 1¼
3000	East Craven Moor*, *l*, Pateley Bdge	10 0 0	7	8 9
600 0	East Goginan, *l*, Cardigan	2 0 0	—	—
30000	East Roman Gravels,* *l*, Salop	1 0 0	—	—
8000	East Van, *t*, Llanidloes*	5 0 0	1¾	⅞ 1½
1114	East Wh. Lovell, *t*, Helston	10 8 6	2	1½ 1¾
20000	Elgar,* *s-l*, Cardiganshire	1 0 0	—	—
12000	Frongoch, *l*, Cardigan (11000 issued).	2 0 0	2	1¾ 2
10000	Frosterley,* *l*, Durham	1 0 0	—	—
3000	Gawton, *c*, Tavistock	4 9 6	⅜	⅛ ⅜
12000	Glan Clwyd,* *l*, Gwyddelwern	1 0 0	—	—
14000	Glenroy,* *s-l*, Isle of Man	4 5 0	⅛	⅜ ⅝
12000	Goginan, & Lvl. Newydd, *s-l*, Card.*	2 10 0	—	—
20000	Goreu,* *s-l*, Carmarthen	1 0 0	1	¾ 1
20000	Great Dyliffe*, *s-l*, Montgomery	1 0 0	1¼	1 1¼
20000	Gt. E. Foxdale, *l*, I. of Man (1*l*. sh)	0 18 0	—	—
12000	Great Holway,* *l*, Flintshire	5 0 0	5	4¾ 5
9500	Great Pant-y-Pydew, *l*, Holywell	2 0 0	—	—
6000	Gt. Wheal Eleanor, *t*, North Bovey.	1 17 6	⅜	⅛ ⅜
10000	Gwern-y-Mynydd*, *s-l*, Flintshire	5 0 0	4¾	4 4¾
10000	Harehope Gill,* *l*, Durham (£1 sh.).	0 5 0	—	—
1200	Hartington Moor,* *carb. l*, Derby	1 0 0	2	1½ 2
6400	Harwood,* *l*, Durham	0 15 0	1s. 6d	1s. 6d.
3000	Herodsfoot, *l*, near Liskeard†	1 0 0	3	2¾ 3
1800	Hingston Down, *c*, Calstock*†	0 6 0	⅜	⅛ ⅜
5000	Hush Elsteddfod Minera,* *l*	2 0 0	—	—
2500	Killaloe, *s*, Tipperary]	1 0 0	—	—
5000	Killifreth, *t*, Chacewater	2 12 6	1½	1¾ 1½
25000	Kingston Con., *s-l*, Stoke Climsland.	1 0 0	—	—
	Ditto, preference	1 0 0	1½	1 1¾
12000	Ladywell,* *l*, Salop	2 10 0	¾	⅛ ¾
12000	Ditto, 10 per cent. pref., 1*l*. each	0 10 0	⅜	⅜ ⅜
5000	Lead Era,* *l*, Mold	2 10 0	3¼	2¾ 3¼
2500	Levant, *c, t*, St. Just	10 14 6	—	—
6000	Livingstone Consols, *t*, St. Agnes	9 10 0	⅛	⅛ ⅛
10000	Lomax, *s-l*, Perranzabuloe	1 0 0	1¾	1 1¼
5 20	Lovell, *t*, Wendron	0 16 0	1¾	1 1¼
25000	Llanrhaidr, *l*, Montgomery*	2 0 0	—	—
30000	Llanrwst,* *l*, Carnarvon	2 0 0	2	1 2
1800	Mawston,* *l*, South Wales	1 0 0	2	1½ 2
6000	Medlyn Moor, *t*, Wendron	2 9 10	—	—
11000	Melynduwr, *l*, Cardigan*	3 0 0	1¾	⅜ 1¼
7000	Mid Devon Copper*	0 6 8	—	—
21000	Ditto	0 2 6	—	—
8000	Mineral Corp. of Great Britain*	10 0 0	11	10 11
11000	Monydd Gorddu, *l*, Cardigan*(Red.)	5 0 0	5	—
12000	Morfa Du, *x, g, s*, Anglesea*	1 0 0	⅞	⅜ ⅞
25000	Nant-y-Ronen, *s-l*, Cardigan*	1 0 0	—	—
15000	Nascent Copper*	1 0 0	—	—
4768	New Bronfloyd,* *c*, Cardigan (5*l*. sh.)	3 16 0	3	2¾ 3
8000	New Dolcoath, *t, c*, Camborne*	8 0 0	1¾	1¾ 1¾
20000	New East Foxdale, *s-l*, Isle of Man.	0 18 0	—	—
1492	New Hendra, *t*, Breage	3 9 0	—	—
3500	New Tincroft,* *t*, Lelant	6 0 0	3	2¾ 3
10000	No. D'Eresby Mount.,* *l, bl*, Carnarv.	1 0 0	1¾	1 1¼
30000	North Laxey,* Isle of Man	1 0 0	4s.	2s. 4s.
2000	North Levant, *t, c*, St. Just]	12 16 0	⅜	⅛ ⅜
50000	North Molton, *c, mn, t*, Devon	1 0 0	1	1
5936	North Treskerby, *c*, St. Agnes	8 17 10	—	—
6400	Oola Hills,* *s-l*, Limerick	5 0 0	—	—
12000	Pandora,* *l*, Carnarvon	2 0 0	⅝	¼ ⅝
6000	Park Valley,* *s-l*, North Devon	6 4 0	⅛	⅛ ⅛
6000	Parracombe, *s l*, Devon	0 5 0	⅛	⅛
16923	Parys Corporation,* *c*, Anglesea	3 0 0	⅜	⅛ ⅜
12000	Pen-yr-Orsedd,* *l*, Flintshire	1 0 0	1¼	1 1¼
12000	Phœnix, & W. Phœnix, *t, c*, Link.	5 10 3	3¼	3 3¼
4000	Pateley Bridge, *l*, Yorkshire	5 0 0	¾	⅜ ¾
7008	Picton,* *s-l*, Holywell, fully paid	1 0 0	⅛	⅛ ⅛
80	Plass-Ddu, Llanarmon,* *l*	5 0 0	—	—
6000	Plympton Mining and Arsenic*	1 0 0	1¼	2¼ 2½
12000	Plynlimmon, *l*, Llanidloes*	2 0 0	4s.	4s. 6s.
10000	Port Nigel,* *s-l*, Carnarvonshire	2 0 0	⅛	¼ ⅛
2000	Prideaux Wood, *t*, Llanivery	5 0 0	—	—
5182	Prince of Wales, *s*, Calstock]	2 8 0	6d.	6d.
6000	Relistian Consols, *c*, Gwinear	0 10 0	⅜	⅛ ⅜
5000	Rhydalun,* *l*, Mold	10 0 0	9	11 11½
15000	Rookhope, *l*, Durham*	1 10 0	¾	⅛ ¼
4200	Snowbrook, *s-l*, Montgomery	5 0 0	—	—
6 000	So. Cwmystwith, *l*, Cardiganshire.	2 0 0	2	1 2
9 000	South Darren, *l*, Cardigan*	1 10 0	1¾	1½ 1¾
30000	South de Eresby Mountain,	1 0 0	—	—
6000	So. Devon United Copper*	5 0 0	—	—
512	South Dolcoath, *c, t*, Redruth	12 8 0	—	—
5000	So. Molton Cons., *s-l*, No. Devon	0 3 6	—	—
18000	South Roman Gravels, *l**	1 10 0	3s.	1s. 3s.
6000	South Roskear, *t, c*, Camborne	8 8 0	—	—
6000	South Tolcarne, *t, c*, Camborne	2 8 0	¾	⅛ ¾
687	South Wheal Crofty, *t*, Illogan	45 10 10	6½	6 6¼
12000	Steddfa,* *l*, Cardigan	1 0 0	—	—
6000	St. Lawrence, Amal., *l*, Flintshire*	2 0 0	—	—
10000	St. Patrick, *l*, Halkin, Holywell*	1 0 0	1¾	1 1¼
8000	Success, &c., *l*, Derb. (12,000*l*. called)	1 0 0	—	—
18000	Sunnyside,* *l*, Durham	2 0 0	—	—
30000	Talybont,* *s-l*, Cardiganshire	1 0 0	—	—
40000	Tamar, *s-l*, Bearalston*	1 0 0	1¼	1¼ 1¾
6400	Teesdale,* *l*, Durham	1 0 0	1¼	1 1¼
14000	Teign Valley, *l, bar*, Bridford	1 0 0	—	—
10000	Temple, *l*, Cardigan*	1 0 0	—	—
5000	Treleigh Wood, *t*, Redruth	6 1 0	—	—
12000	Trethellan, *s-l*, Crantock*	3 0 0	—	—
640	Truro*, *l*, Nerquis, Flintshire	10 0 0	—	—
5000	Tyn-y-Fron,* *l*, Cardigan	1 0 0	1	¾ 1
5000	Ditto	0 7 6	⅜	⅛ ⅜
10000	Van Consols & Glyn,* *l*, Llanidloes.	2 0 0	¾	¼
1000	Vaughan*, *l*, Cardiganshire	10 0 0	—	—
18000	Victor,* *l*, Flintshire (£1 share)	0 5